MACHINERY OF THE "AURANIA." See p. 177.
SHIPBUILDING AND THE TONNAGE PROBLEM. See p. 172.

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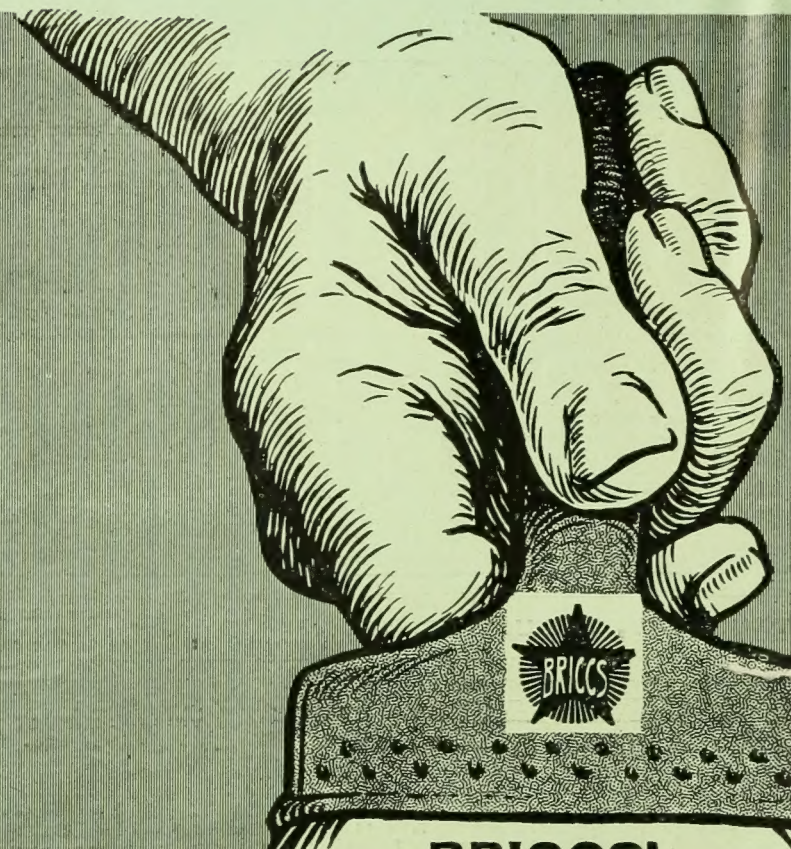

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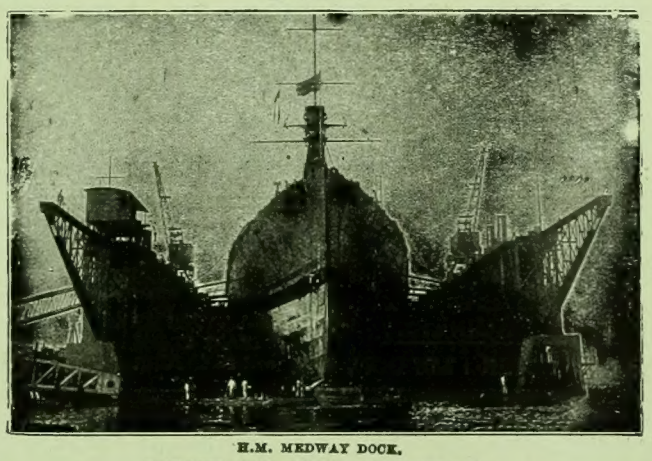

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BRITISH shipping companies must, as far as circumstances permit, take steps to safeguard their interests after the war. For instance, we may have a resumption of the emigrant traffic on a considerable scale to North and South America, and it is rather disconcerting to have such statements made as that the French Government intends to preclude the embarkation at French ports in other than French steamers of emigrants proceeding across the Atlantic. In these circumstances it is natural that British steamship lines should make representations to the Foreign Office to secure our free participation in the emigrant traffic especially from Northern and Eastern Europe. Sir Owen Philipps has obtained from Lord Robert Cecil, the Under-Secretary for Foreign Affairs, an assurance in the House of Commons that the Government will do their utmost to get for British steamship companies the facilities which they desire. The recent policy of the Foreign Office has been to postpone diplomatic representations, but the shipping interests have dissented from this course. Renewed consideration is accordingly being given to the subject by the departments concerned. Even in war time it would be short-sighted to allow our future prospects in this matter to be prejudiced in default of representations in the proper quarters.

Emigration Traffic.

The Munitions Ministry's official announcement that the dilution clause which has been omitted from the new Munitions Bill related to the extension of the principle to civil work and not to dilution on war work was, in our opinion, uncalled for. The provision was perfectly plain to anybody who cared to read it, and, moreover, the intention of the Government was never for a moment left obscure in the negotiations which preceded the introduction of the measure. Still, the announcement serves one rather useful purpose. It puts the Amalgamated Society of Engineers in a difficulty from which it can extricate itself only by straightforward definite action. The question put to the rank and file in the recent ballot was whether the Government should, or should not, be released from its twice-given pledge not to extend dilution to civil work. The answer given—which was, as they say at Westminster, in the negative—compelled the Government to find another way of increasing the number of men available for war work. According to the official announcement it proposes to get the necessary men by further diluting the skilled labour employed on munitions. As the A.S.E. is definitely and extensively committed to dilution on war work, it obviously must now either loyally assist the Government or go back on its pledged word. The fact of most importance is, as it has been all along, that more dilution is necessary somewhere.

The Dilution Difficulty.

The scheme for arbitration when there is a question as to whether the war or marine insurance should bear the loss of a missing vessel has always had our warmest support. Underwriters and owners alike are undoubtedly in favour of such a method of settling the difficulties which perforce arise when such a case comes up for settlement, and it would be a great pity if any hitch occurred at this state of affairs to hinder the completion of so desirable a measure. Unfortunately, it appears that the scheme which has been drawn up by the Institute of London Underwriters and submitted to the authorities does not meet with their entire approval. The differences are believed to be not great, and their quick disappearance should not be a difficult matter to encompass. It is therefore to be hoped that energetic methods will be applied to make smooth the way for the completion of the scheme. The matter is one of urgency, and it is probable that once accomplished the arbitration scheme will be immediately called into function. In the meantime, any cases which are being held over must remain in abeyance, since the use of legal procedure might result in further delay.

War or Marine Loss Arbitration.

It is satisfactory from an underwriter's point of view to be able to record that the rise of 10 per cent. in premiums for tramp steamers, which formed the subject of an agreement early in the year, seems to have been successfully established. In a few cases opposition to the rise was met with, but the market held to the agreement unanimously, and it has now become generally accepted that no insurances on a tramp steamer can be renewed on the old terms. With liners, however, a somewhat different state of affairs has to be recorded. The attempt to put up liner rates, which was made before the tramp steamer agreement referred to above was come to, has not been universally successful, while the absence of the disbursement clause in liner policies has permitted insurances on this class of steamer to be placed on somewhat inadequate values. It is probable that the market will shortly turn its attention to remedying this state of affairs, and although no accurate forecast can be made, it would not be surprising if a 10 per cent. rise in rate, together with a limitation of disbursements, should occupy the attention of the leaders of the market in the near future.

Liner Insurance Rates.

Organisation of Shipping.

Not the least interesting of the points about shipping which the Prime Minister made in his speech on Thursday was that with less tonnage than we had, we are carrying more than we did. That gratifying state of affairs is due to the more efficient use which the Shipping Controller's Department is able to make of the available carrying capacity. Of course, with a single control and more or less definite requirements to fulfil it was comparatively easy to achieve a very marked improvement on pre-war efficiency. The conclusion which wise and progressive shipowners will draw from the facts is, however, that if this degree of economy in the use of shipping is possible in war time, something approaching it cannot be impossible in peace time. The economy which is due to the elimination of competition cannot, of course, be reproduced—unless the State stays in the shipping business. But a privately-owned industry might without much difficulty be organised in such a way as to make it much more profitable to owners, shippers, producers, and manufacturers—to, in fact, the whole community of trading interests. As is being demonstrated daily, the collection, loading, discharge, and distribution of cargoes in pre-war days left a great deal of room for improvement. Their inefficient organisation reacted seriously on pure shipping economy, and because of that it was creditable to nobody—least of all to port authorities and railway companies. A great all-round improvement is now quite clearly possible, and it is to be hoped that the opportunity to effect it will not be neglected.

Spanish Shipping Prospects.

It is now considered to be not at all improbable that the war may result in a revival of Spain's maritime prosperity, even if it does not lead to the re-birth of her economic power. True, submarine warfare has reduced the national tonnage somewhat, though not to any serious extent, but as all the shipyards are crowded out with work, and as important additions are being made to the output facilities, the Spanish mercantile marine shows every promise of a great expansion. New services to the Americas have either been established or are under consideration, and it would not be surprising if after the war the Spanish route, as regards passenger traffic, became of much importance. The possibilities of development are certainly enormous. During the last three years the Compañia Trasatlanticà has trebled its capital, and at present several fine steamers are in course of construction for it. A large and influential section of Spanish commercial life is now, we understand, definitely in favour of an ambitious programme, with a view to the resuscitation of the country's overseas shipping, and in this connection the reorganisation of the principal ports, including the improvement and increase of handling facilities, and the provision of better railway communication with the agricultural and industrial centres, are strongly urged. In addition, the institution of a protective policy for the maritime industries is suggested in certain quarters. And, as in this country, the establishment of a trade bank is proposed as a means of ensuring financial support for the various schemes that may be thought necessary.

Control of Freights.

We fail to see the grounds on which a Government Department should feel irritation if its administrative action is tested in the law courts. As we have noted, it would appear that certain sums which accrue to the Government in connection with sea-carriage of uncontrolled commodities may find their way to the Exchequer. Sir Walter Runciman, in a series of questions in the House of Commons last week, sought to elicit from the representative of the Shipping Controller an elucidation of certain constitutional points involved in the matter. Sir L. C. Money, in reply, spoke of "the incidental advantage of diverting to the Exchequer, for the benefit of the community at large, certain profits which would otherwise go into the pockets of the shipowner." He proceeded to remark that the House would learn with regret that the policy was being challenged in the courts by two prominent shipping companies with which a member who was a shipowner was closely associated. Granted that the sums accruing to the Treasury are not large, it does not follow that a shipowner who feels aggrieved ought not to have recourse to the law courts. He may think an important legal principle is involved. If he is right, he will win his case. If he is mistaken, he will pay costs. We express no opinion on the merits of this particular case, but for a Minister to regret that administrative action should be challenged in a matter like this seems too ardent an affirmation of bureaucratic infallibility.

Silver War Badges.

Silver war badges are at last to be granted to officers and men of the merchant service who, by reason of wounds received through enemy action, or of illness attributable to war service, have had to relinquish their employment at sea. A roll of honour is to be instituted in which will be published the names of those who have lost their lives in the war. These marks of recognition will be highly appreciated by all sections of the shipping community. They place official emphasis on the fact that those engaged in the merchant service are partaking in dangers to life as great as are the lot of many combatant units in the war. The perils of a merchant ship in submarine infested areas have been just as accentuated as those which a patrol vessel experiences. Our only surprise is that the silver war badge has been so long withheld. The White Paper intimating the granting of this mark of recognition enumerates other concessions which have been made to the merchant service, in war time, such as compensation for death or injury, insurance of effects, payment of wages after the loss of vessels and provision for merchant seamen who have been taken prisoners of war. We may note that a ready ear seems to be given in Parliament to proposals for facilitating the recording of votes of absent members of the merchant service at Parliamentary elections. A scheme of proxy voting has the support of several influential Members of Parliament who have shipping connections.

Recognition of Merchant Seamen.

We publish on page 176 the text of a statement issued by the Board of Trade describing the provisions which have been made by way of compensation for death or injury, and the other arrangements made for the benefit of officers and seamen of merchant ships. This recognition of the gallant services which have been rendered in the face of continuous and undreamt-of dangers has come not a bit too soon. Ever since the outbreak of war the men of the merchant service have shown by their pluck and endurance that they are worthy to rank as equals with their brothers in the Navy or the Army, and yet hitherto they have not been protected by any of those rules which benefit the men in the combatant services and their dependants. This is all to be changed and injury or death will be met by compensations similar to those provided by the Naval and Military pension authorities. The scheme, which is non-contributory, is to be administered on behalf of the Board of Trade by the War Risks Association, and except in the case of ships on Government service a proportion of the cost is to be borne by the owners. Provisions are made for the dependants of those men who are prisoners in Germany, and also for the prisoners themselves, whilst the officers of the mercantile marine are secured the advantages of internment in combatant officers' camps. It is also announced that a well-known writer has been engaged to prepare an official history of the part played by the merchant service in the war; if all the facts are published this history can be made of entrancing interest.

The Shipbuilding Position.

The conclusion which anybody engaged in steelmaking and shipbuilding here and on the other side of the Atlantic should, we think, draw from Mr. Lloyd George's tonnage figures is that there is nothing to prevent us exceeding the estimated production, and thereby reducing the net losses. The estimates are based upon performances, and it is not difficult, if the spirit is willing—and the spirit is, we believe, very willing—to break records. To read much more into the official statement than appears on the surface would be to take a risk. There is, however, one point which we think the Prime Minister might profitably have made without in any degree helping the enemy. All the figures he used were of gross tonnage, no doubt because the gross ton is the standard unit for statistical purposes. For the six months to the end of July our average net losses have been 250,000 gross tons per month; for June and July alone they have been 175,000 tons gross. If, instead of tons gross, the Minister had used tons of deadweight cargo carrying capacity—and that is, it will be agreed, the only true test for the time being—the net losses would obviously have worked out at lower figures. In other words, the vessels we are losing are not of quite the same class as the vessels we are building. As we suggested a week ago the fact is a little disquieting to some owners. Still, it might not unjustifiably have been cited in further support of the British official contention that the U-boats cannot put us out of the war.

Utilisation of Canals.

An appeal has been issued by the Canal Control Committee to local municipal authorities, Chambers of Commerce and traders' associations throughout the country, urging them to promote the use of inland waterways for transport to the utmost possible extent. The principal object for which the Canal Control Committee has been appointed is to relieve the traffic on the railways by increasing the amount carried on the canals. Three sub-committees have been appointed, the Northern sub-committee having control of the Leeds and Liverpool Canal, Aire and Calder Navigation, Bradford Canal, Sheffield and South Yorkshire Navigation, New Junction Canal, Calder and Hebble Navigation, Rochdale Canal and Bridgewater Canals. The Midland sub-committee has control of the Trent Navigation, Weaver Navigation, Staffordshire and Worcester Canal, Birmingham Canals, Coventry Canal, Loughborough Navigation, Leicester Navigation, Shropshire Union Canals, Worcester and Birmingham Canal, Severn Navigation, Gloucester and Berkeley Ship Canal and Erewash Canal, whilst the Southern committee controls the Birmingham and Warwick Junction, Warwick and Birmingham Canal, Warwick and Napton Canal, Oxford Canal, Grand Junction Canal and Regent's Canal. The committee is taking steps to provide crews for as large a number of boats as possible, and it is hoped that a greater number of boats capable of carrying merchandise will be available at an early date. It is suggested that all who have wharfage accommodation on, or who are in close proximity to, inland waterways, should not only use the existing facilities to a greater extent than hitherto, but should when practicable provide themselves with boats for canal traffic.

Safe Loading.

When the technical qualities of a ship are known, it is a comparatively easy matter so to load her that a reasonable amount of stability will be given. It is the custom with some builders to supply the requisite information to ensure this safe loading. There are, however, many vessels on service which have never been inclined, and still more whose stability curves have never been drawn out. If a master desires to have accurate knowledge regarding the qualities of his ship, he should have the inclining experiment performed. By this means the relative positions of the metacentre and centre of gravity will be found, and he can arrange the stowage so that a reasonable metacentric height will be given. The fact is, that such an experiment should be made with frequency, especially if different types of cargo are carried in the same hull. Many officers rely on experience only to guide them, and it appears as if that were a reasonably safe guide. In vessels carrying cargo only, there is probably little danger of these having too little stability when loaded, as the proportions of vessels are now much better than they used to be. In ships with huge superstructures, or with complete shelter decks under which light cargoes are carried, the stability problem requires more attention than in ordinary tramps of average build. Whilst experience may be a tolerably good guide, ship officers should not neglect the means which science provides for procuring safety.

Petroleum in Great Britain.

On Thursday last (August 16) Mr. Walter Long introduced in the House of Commons the Petroleum (Production) Bill which places in the hands of the Government "all rights to get petroleum and enables the Government to lease and define petroliferous areas, thus preventing waste and loss of time." This Bill may well prove to be of the greatest importance to marine engineers and shipowners in view of the development of the Diesel engine as a means of propelling ships, and also in view of the increasing use of oil fuel instead of coal for marine boilers. One of the greatest obstacles to the further development of the use of oil in both of these directions is the limited supply available and the consequent rapid increase in the price of the commodity; unless vessels ply regularly to localities where oil is found naturally and at which they can bunker for the round voyage, the cost is in many cases prohibitive; for whilst oil fuel can be obtained at nearly every port in the world, the cost of carriage from the oilfields to the port has to be added to the cost of production of the fuel, and the former is often greater than the latter. If, however, shipowners can be assured of a good and cheap supply at home ports, the greatest obstacle to its extended use would be removed. That oil-bearing structures do exist beneath certain portions of the British Isles was clearly shown in a paper read recently by Mr. William Forbes-Leslie to the Institution of Petroleum Technologists, and if the Government is instrumental "in securing economy in exploration and in drilling and boring, and also a maximum supply for the nation," the results to the marine engineering industry may indeed be far-reaching in their effects.

Gyroscopic Action on Turbo Bearings.

The effect of gyroscopic action of the marine steam turbine on its bearings and hull structure, when the ship is pitching in a seaway, has been investigated at various times, and the results have generally shown that with low speed turbines the effect is negligible. In his paper to the Institution of Engineers and Shipbuilders of Scotland, in 1905, on "Gyrostats and their action," Professor Gray showed by a series of examples taken on ships of different types—from a destroyer to an Atlantic liner—that the magnitude of the couples set up under rotation, and which act in a plane perpendicular to that of pitching, are so relatively small that they have no effect on the bearings or in causing vibrations of the hull structure. Experience with turbines of the high speed geared type has indicated that the gyroscopic effect of these is also small, owing to the lightness of the masses contained in the revolving rotor. In the case of heavy rotating masses running at high peripheral speeds the couple produced may be of considerable magnitude, and it is of importance that careful attention be given to minimising this disturbing couple. Experience with heavy turbo-generators has shown that the bearings tend to become oval and in order to reduce the wear to a minimum, the axis of rotation should be placed at right angles to the greatest disturbing movement of the ship. For a ship in which it is anticipated rolling may occur, the axis of generator should lie fore and aft, but to minimise the effect of pitching the axis should lie athwartship.

SHIPBUILDING AND THE TONNAGE PROBLEM.

THE Prime Minister took the House of Commons and the country into his confidence on Thursday of last week as regards the question of shipping and shipbuilding. The statement was made in response to a speech by Mr. Kennedy Jones, in which the member for Hornsey asked for a full and frank statement regarding the submarine problem. That portion of Mr. Lloyd George's reply which dealt with the shipbuilding and shipping position is given *in extenso* on page 180.

The speech is notable, in the first place, because it lifts the veil of secrecy which has hidden all information from the public concerning our shipbuilding output, not only regarding naval construction—as to the necessity of which secrecy there can be no doubt—but also concerning mercantile construction, on which subject we are inclined to believe a little daylight and plain speaking would have had a salutary effect. However that may be, the country now knows that at the time when we, in common with our contemporaries, were forbidden to mention any shipbuilding figures, so far as this country was concerned, the output had gone down to rather less than 28 per cent. of that turned out in the full shipbuilding year which preceded the war. Let us state the figures, estimating the first two on statistics published by Lloyd's Register :—

Year.	Output, Tons gross.
1913	1,950,000
1914	1,700,000
1915	690,000
1916	540,000

The country knows, or, at any rate, it believes, that the pressure of Admiralty construction accounted for the stoppage of a large amount of mercantile work; but since the stimulus given by the Shipping Controller, and more recently by the new Department at the Admiralty, presided over now by Mr. Alan Anderson, the possibility of turning out more ships has been taken in hand, with the result that during the first half of the year, the Prime Minister tells us, 484,000 tons were constructed. None of these ships were standard ships, if we read the figures aright, for Sir Leo Chiozza Money said in the House the other day that the first standard ship would be in service shortly. Now, for the second half of this year—and this period will embrace the activities of the Admiralty Controller—it is hoped to build rather more than a million tons, and to obtain delivery of 330,000 tons purchased abroad. On this reckoning the gross addition to our mercantile fleet will be nearly equal to that of 1913. Even excluding the ships bought overseas—and they constitute no further addition to the world tonnage by virtue of transfer of flag—the estimated output this year will be equal to the average output for the 10 years preceding the war. Mr. Lloyd George was a little too free with his millions when he said the tonnage built in this country during peace times was "on an average something a little under 2,000,000 tons. Two million tons represents rather a good year." We will go further, and say that two millions represents the best shipbuilding year of any country in the world, and that was only achieved by our own; so that the 3,000,000 tons a year of which he spoke some time ago, is a very ambitious programme. However that may be, we have the concrete fact that our merchant shipbuilding output will be raised from the beggarly half-million tons of the "hide-the-truth" epoch, to something more like the normal, "if there is no trouble in the yards," as the Shipping Controller put it.

This is, of course, only half of the story. The other embodies the work of German submarines. Mr. Lloyd George told us that in April last the Germans sank 550,000 tons, and in July 320,000 tons. The reduction is noteworthy. But if we strike an average of the two as a basis, it appears that during the four months, April-July, the Germans must have put down 1,800,000 tons of our ships, for we assume Mr. Lloyd George did not include Allied or neutral vessels. This figure in itself nearly approaches the gross addition to our mercantile marine this year, if all the forecasts work out well. The Prime Minister said that we were losing, taking shipbuilding into consideration, at the rate of 250,000 tons a month, or, on the optimistic forecast based on the first two weeks in August, 175,000 tons. Neither of these are figures that can be lightly cast aside, especially when Allied and neutral losses are considered. This country will want to see two things before it can look complacently on the German submarine campaign, a campaign which, however, is only half as successful as the Germans claim. The first is a greater measure of success attending Admiralty methods. The second is that all Allied countries should pull their utmost to accelerate their shipbuilding programmes. The enormity of the task of defeating the submarines is not one to be minimised. The position, as we read it, is there is no room for optimism either on our part or Germany's.

THE LINER OF THE FUTURE.

JUDGING from what is happening in the shipbuilding industries of the United Kingdom and the United States, it is not rash to assume that, before long, liner interests will be free to begin the rebuilding of their fleets. Plenty of steel is apparently in prospect; supplies of suitable labour are increasing, especially on the other side of the Atlantic; and the visible provision—to use a phrase of which Sir William White was fond—for shipbuilding is in almost every Allied country in process of abnormal expansion. Of course, while the war lasts, and for some time afterwards, deadweight carrying tonnage must, for an obvious reason, have preference. Whether the critical point of the submarine warfare against merchant ships has been passed, or is still to come, it would be imprudent to say. But it stands to reason that as the visible provision for shipbuilding, the output of materials, and the supplies of suitable labour increase, a steadily growing margin of resources must become available for the production of other kinds of ships besides deadweight cargo carriers. It is, therefore, as we suggest, not rash to assume that before long liner interests will be free to begin the rebuilding of their fleets.

Ocean transport under war conditions has involved so many changes, that the average man probably takes it for granted that the liners of the late war and early post-war periods will be different in many important respects from the liners of pre-war days. There will, of course, be differences, because shipbuilding progresses and prospers on its experience, or, to be more exact, on the experience of its clients. That any of the differences will be revolutionary is, however, highly improbable. Liners cannot be standardised to the same extent as cargo vessels; you cannot, that is to say, make a design, and assume it to be suitable for all, or even a large group of, liner services. One could, of course, standardise liners for particular services—Harland & Wolff were, at any rate, doing it—in pre-war days. The fact remains, however, that of all types of merchant ships the liner lends itself least to standardisation of design. The most that can be done is to evolve designs for particular trades, and in all probability no more than that will be done. Unless we are much mistaken, the liners of the late war and early post-war periods will be very like the newer vessels which were serving the world when hostilities began. The majority of them will, of course, be geared turbine ships, and many of them will burn oil; but that would have been so in any case, for the tendency was steadily in these directions when war broke out.

We are thinking, of course, only of passenger and passenger and cargo ships. It is not easy to foretell what the cargo liner will be like, for the Diesel engine, which is strongly backed by some powerful shipping interests, cuts across the prospect here—with rather perplexing effects. Rightly or wrongly, some people take the view that in respect of, at any rate, the elegance and luxuriousness of its accommodation for passengers, the liner can never be the same again. For that belief there appear to be two broad foundations. One is that after the war the tastes of *voyageurs* will be simpler. Travellers will, it is assumed, make a permanent virtue of the present temporary

necessity to be economical. There is something in the idea. We are all spending less than we did, partly because we are earning or making less, and partly because it would be indecent to be extravagant in such serious times ; and it is not doubtful, but practically certain, that we shall continue to be sparing with our money for a considerable time to come. There is bound to be less luxury in living, both afloat and ashore.

The other foundation for the belief that in respect of her passenger accommodation the liner will never be the same again, is that the *voyageur*, making a virtue of the necessity to be saving, will be helped by the character of the ships he is obliged to use. A number of the very elegantly provided vessels, which challenge comparison with the more luxurious hotels ashore, will still, it is admitted, be available ; but the great majority will be, it is claimed, much simpler and more suitable to the *voyageur's* new habit of thrift. The general effect will be, our friends say, a much-needed simplification of the passenger liner's accommodation, which had, we are told, become far too luxurious before the war came to chasten us.

We are not so sure about it as some well-informed people in both shipping and shipbuilding circles seem to be. Certainly, there was the appearance of excess in the furnishing and decoration of many passenger ships in pre-war days, especially in the furnishing and decoration of some of the German ships. But the proper test to apply is not that which the average objector to luxury applies. As decorative art the thing may be bad, and as provision for human needs it may be grossly extravagant. But the really determining consideration is, are passengers willing to pay for it ? If they had not been willing to pay for it, the luxury would never have been provided. If they are not willing to pay for it now, it will not be repeated. "Then," it may be said, "that settles it ; passengers will not be willing to pay for it."

Time must, of course, be left definitely to confirm or to deny that assertion. Still, the average man, putting all shipping and shipbuilding considerations aside, and relying solely on his knowledge of human nature, may be tempted, it is to be feared, to forestall time. He may argue with a good deal of reason that, being ordinary human beings, passengers will gradually tire of the new habit of denying themselves, as the original justifications of it disappear. As for the effect of the simpler accommodation provided on existing ships, he may claim that it cannot be other than to speed the passenger's return to the old extravagant habit of living as luxuriously as possible, while afloat. Our own opinion is that before the war is long past the accommodation of the liner will be more generously and more elegantly provided than ever.

THE IMPULSE-REACTION TURBINE.

THE successful introduction of the reduction gear in connection with marine steam turbine installations, by means of which the turbine, which is essentially a high-speed machine, and the screw propeller which works best at a low speed, can both be designed to work together under the most economical conditions, has necessarily led to many changes in the fundamental design of the geared turbine as compared with the direct-coupled machine.

High-pressure steam expanding into a vacuum moves at a very high velocity, and it can be shown by theory—and the result is confirmed in practice—that in order to obtain the maximum amount of power in a turbine from a given weight of steam, the velocity of the moving blades relatively to the fixed or guide blades should be about half the velocity of the steam. In turbines of large power, this condition is obtained with a reasonably low speed of revolution by having the rotor of large diameter, and it will be remembered that in many large vessels having turbines without gears, propeller speeds of 170 r.p.m. are obtained. For smaller powers this condition cannot be fulfilled, and hence for smaller vessels having direct-coupled turbines higher propeller speeds have to be employed ; moreover, it must not be forgotten that these larger low-speed turbines have a higher first cost and are not so economical to run as smaller machines developing the same power at a higher speed of rotation.

There are two principles which have been successfully employed in the development of the steam turbine, the "impulse" principle and the "reaction" principle. If the turbine be so designed that there is a fall of pressure, and consequently expansion of the steam in passing through a set of fixed blades or nozzles, but there is no fall of pressure in the moving blades, it is described as an impulse turbine. If on the other hand there is a fall of pressure divided approximately equally between the guide blades and the moving blades, we have a reaction turbine. Whether a fall of pressure takes place or not at any row of blades depends on the relative areas of the passages by which the steam enters and leaves the row. In a turbine of the impulse type the steam passage is of equal width at both edges of the moving blades, but in the reaction type the exit space is narrower in both fixed and moving blades, so that the steam leaves at a lower pressure and thus has some recoil or reaction effect. Thus the guide blades in both the impulse and the reaction turbines have similar profiles, but the moving blades differ.

Reaction turbines—which have been almost exclusively used for marine purposes in this country—have generally a greater number of blade rows than impulse turbines, and since there is a fall of pressure at each moving row as well as at each fixed row, it is obvious that the total fall of pressure is divided into a much greater number of stages, and it follows that at each stage the increase of steam velocity is less in a reaction than in an impulse turbine. This results in a lower peripheral speed of the rotor, and in order to keep this speed, and consequently the speed of the propeller as low as possible, the number of stages has been made as great as possible, so great in fact that two separate turbines are required, a high-pressure turbine and a low-pressure turbine.

The great disadvantage of the reaction turbine is to be found at the high-pressure end. When steam at high pressure is employed, the volume per pound of steam is very small, and this results in blades of short length being required, so short in fact that the clearance area between the cylindrical surface of the drum or the cylinder and the respective blade tips is quite an appreciable percentage of the total peripheral area through which the steam passes. In order to reduce this clearance to a minimum, it is customary to thin the blade tips down to a knife edge, these being just in contact with the drum or cylinder when the turbine is erected, and grinding away to adapt themselves to running conditions. But as a result of the deflection of the shaft due to the weight of the rotor and to centrifugal force when running, a small clearance always shows itself when running, through which the steam passes without doing any work, with the result that there is always a loss of efficiency at the high-pressure end.

The numerous stages required for the reaction turbine necessitate the employment of a comparatively long drum, and with superheated steam, the employment of which is becoming increasingly common due to the undoubted economy resulting from its use, the expansion or distortion due to the high temperature may affect this long drum differently to the cylinder, with the result that the rubbing of the blades, even if it does not have disastrous effects, inevitably tends to increase the clearances with corresponding loss of efficiency.

If, however, as a result of the employment of reduction gears, a higher speed of rotation of turbine can be permitted, many stages of the high-pressure reaction turbine can be replaced by a one-stage impulse turbine. This leads to many advantages. In the first place the length of the turbine is greatly reduced and the rotor can therefore be made short and stiff, with the result that the clearances in the subsequent reaction portion of the turbine are not likely to be affected by the deflection of the shaft. Again, the impulse blading on the rotor and the subsequent reaction blading is subjected to lower steam temperatures and pressures than in pure

reaction turbines, the high-pressure superheated steam being confined to the steam passages up to the nozzles and to the nozzles themselves, in which the steam undergoes a large fall of pressure and temperature with corresponding increase of velocity. The effects of distortion are therefore greatly reduced, and owing to the high velocity with which the steam leaves the fixed impulse blades, the tendency is for the steam to follow the direction thus acquired when passing through the moving blades; consequently, the effect of clearances is not now of such great importance, and thus the efficiency of the impulse turbine is greater than that of the reaction turbine working between the same limits of pressure.

It will therefore be realised that the combination of the impulse and the reaction principles in one element results in a turbine which has many advantages over one built on either principle by itself, and judging from the number of these turbines which have recently been built for use in conjunction with reduction gearing it would appear as if the impulse-reaction turbine is recognised by marine engineers as being the most efficient type of turbine yet evolved.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by Correspondents.*]

FIVE-BLADED PROPELLERS.

32, Victoria Street,
London, S.W.1.
August 18.

To the Editor of Shipbuilding and Shipping Record.

If your correspondent "Propulsion" will do me the honour of reading what I wrote some years ago in "The Screw Propeller," published by Chr. Griffin & Co., he will see in Chapter XI that many experiments *have* been made with propellers having one, two, three, four and six blades, both with models and full-sized screws. H.M.S. *Emerald* was tried with screws 18 ft. diam., having two, four and six blades, that with four blades proving the most efficient.

Some 20 years ago we made, at the request of a Goole shipowner, a screw with five blades; but after trial it was discarded by him without his disclosing the results or reasons for so doing.

Mr. Charles Sells' experiments with models in 1856 having blades varying in number from one to six, are also given by me, and it will be found that they were instructive as well as interesting.

A. E. SEATON.

MEASUREMENT OF SHAFT HORSE-POWER.

Dumbarton, August 11, 1917.

To the Editor of Shipbuilding and Shipping Record.

I have read with interest the articles on "Measurement of Shaft Horse-Power" in the *Shipbuilding and Shipping Record*, and find that you have given a good description of the Denny-Edgecombe meters. There is one paragraph, however, which seems to miss the very point I want to emphasise about my meters.

On page 85 of the July 26 issue, the paragraph at the beginning of the first column reads :—"From the foregoing descriptions it will be realised that whilst the twisting moment in a shaft can be easily and accurately determined, provided that it remains fairly constant during each revolution of the shaft, the apparatus is not suitable for recording the twisting moment in the shaft at every instant of revolution." The phrase that reads "provided that it remains fairly constant" is one that does not apply to the meter with electrical transmission, the torsion is recorded on the ammeter whatever be the amount of the inconstancy, but it is the *mean* reading. This is the very point which makes the electrical type of meter "Universal," and that in which it differs from all others.

When this meter is running on a reciprocating engine shaft with greatly varying torsion during one revolution, the contacter on the rheostat is in different positions for all points, as the shaft revolves because the turning moment is different at all points, and therefore the contacter is moving rapidly to and fro over the rheostat, the motion corresponding to the fluctuations of the torsional variations. The inertia of the electrical transmission apparatus does not permit of the ammeter following all these rapid variations, and, therefore, they are not recorded, but the pointer indicates the *mean* of all the electrical resistances, caused by the fluctuations, and, therefore, gives the correct *mean* of all the movements of the pointer, and at the same time of all the torsional changes. This is the essential point of this type of meter, and makes them suitable for any type of engine, whether the torsion is nearly constant or widely divergent.

I hope I have made the point clear, for this is the crux of the whole matter, that in order to ensure accuracy, a torsionmeter must be so designed as to take into account all the variations during a revolution and not to be satisfied with the reading at any one position.

F. T. EDGECOMBE.

THE PROPOSED SCOTTISH SHIP CANAL.

Plan showing Junction with Clyde.

The movement in favour of constructing a ship canal across central Scotland is not of recent development, but it has received a great stimulus from the conditions which have arisen out of the war. For the past 40 years it has been pointed out by prominent men and public bodies that to construct a direct navigable channel from the Forth to the Clyde would be advantageous both for the State and for the commerce of the country. In 1909 the Mid-Scotland Ship Canal Association was formed. Since that time public opinion has to a large extent been in favour of the direct route. In October last a joint meeting of representatives of the cities of Glasgow and Edinburgh and the Convention of Royal Burghs was held to consider the matter, and on that occasion it was unanimously agreed to adopt the direct route. Messrs. Crouch & Hogg, civil engineers, Glasgow, who had surveyed the direct route some years ago, were then approached to prepare an up-to-date plan and to draw up a report to place before the Admiralty. At the same time the Admiralty were asked to delay coming to a decision until the report pointing out the advantages of the direct route were put before them. A plan and report were duly prepared showing the western termination of the proposed canal at Clydebank instead of at Yoker, which was formerly thought to be the most suitable point for the junction of the canal with the Clyde. Messrs. Crouch & Hogg have now prepared a further plan, which is reproduced on page 175, showing details of the junction now suggested. The proposals include the widening of the river at this point, so that vessels of a large size may be dealt with, and the utilisation of the south bank of the Clyde. Newshot Isle and the surrounding ground, which is at present liable to be submerged in times of flooding, could be used for the construction of new docks such as are to be found at New York, while the ground immediately to the east and west could be used as sites for shipyards. Further inland there is ample room for a new town. In the engineers' view, Clydebank is the most suitable point for the junction of the canal with the river because at this point the ground on the south side of the Clyde is not only available for the widening of the river, but is most suitable in every way for docks and graving docks of the largest size, and for a new town behind the docks, while railway communication can be easily obtained.

The comparative distances of the direct and Loch Lomond routes are as follows :—

	Miles.
Grangemouth to Clydebank by the direct route	30·5
Grangemouth to Clydebank by the Loch Lomond route	85·5
Grangemouth to the Cloch by the direct route	50·5
Grangemouth to the Cloch by the Loch Lomond route	69·5

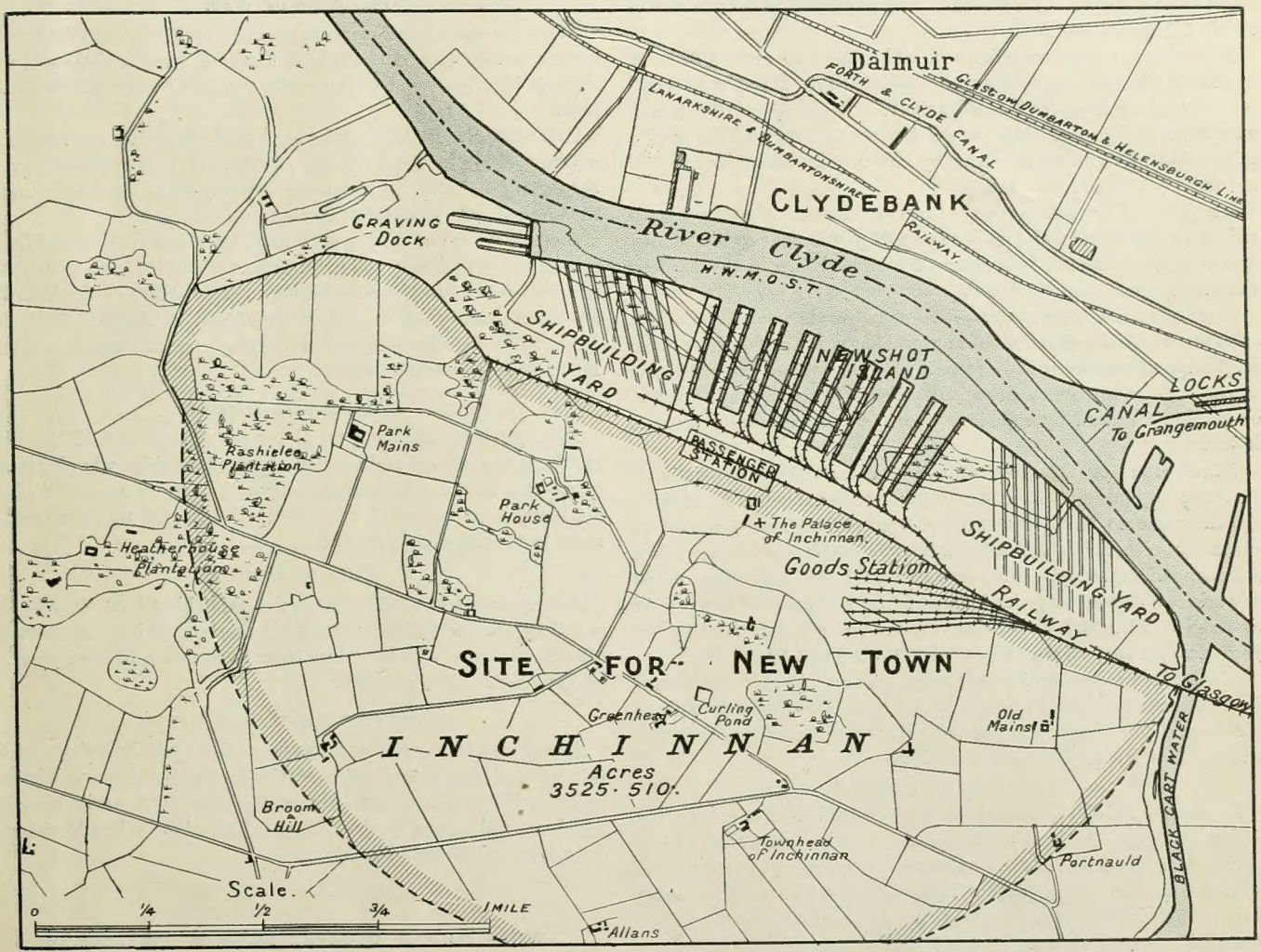
The ship canal by the direct route would be practically at sea level all the way, while by the other route it would have to be at the level of Loch Lomond, which varies 5 or 6 ft. in the course

of the year, and is on an average 20 ft. above high-water in the river Clyde. As regards water supply, the direct route being at sea level is therefore independent of fresh water supplies, and is in this respect alone greatly superior to the Loch Lomond route. In addition to the saving in distance by the direct route, there would be a greater corresponding saving in time, as the direct route could be easily lighted, so as to be fully utilised by night as by day, while the Loch Lomond portion of the other route could not be so easily navigated by night. In distance the saving between the Continental ports and New York would be about 300 miles. So far as the interferences with existing roads and railways crossing the direct route are concerned, these would be negotiated chiefly by fixed bridges, except at the Clydebank end where it might be necessary to adopt swing bridges.

laid before the Corporation the claims of the "direct route" as against those of the longer route by Loch Lomond.

The Armstrong, Whitworth Plans.

Mr. Arthur Kay, Chairman of the Association, who was the principal speaker, said that in the spring of this year they received information that the Admiralty had been considering what uses could be made of a ship canal across Scotland if it existed; that they were considering what steps should be taken to decide between the Loch Lomond route with locks, and the direct route at sea level without locks; that plans and estimates complete in every detail had been in their hands for some time, and that the Loch Lomond route was looked upon with favour as a necessary undertaking at the conclusion of the war. They also learned that the plans had been prepared by Armstrong, Whitworth & Co., and



Map showing Junction of Proposed Scottish Ship Canal with the River Clyde at Clydebank.

Local Authorities and the Canal.

For some years the Corporations of the principal Scottish cities and other public bodies took very little part in advocating the construction of the canal. In recent months, however, this attitude has been entirely changed, as the belief has gained ground that the Admiralty contemplate taking action in regard to the matter after the war. The Clyde Trustees, who at first decided to have nothing to do with the proposal, resolved at their last meeting a few days ago to receive a deputation from the promoters of the "direct route" campaign.

At a meeting of the Glasgow Corporation held recently, a deputation from the Mid-Scotland Ship Canal National Association was received, and several members of the deputation

that they contained Admiralty notes of approval. The canal was to be 40 ft. deep, to cost 33⅓ millions, and that it was intended to spend £15,000,000 sterling on shipyards at Rosyth. At that time they were not at liberty to publish the information, but they met the Corporation Canal Committee in the middle of June and, he believed, satisfied them that the position was critical. Since then their information had been publicly confirmed by answers to questions put in Parliament. It had been stated publicly that Armstrong, Whitworth & Co. prepared the plans, and that if the Corporation wished to have them examined by an expert engineer they would require to apply to that firm, and the Admiralty would offer no objection. The deputation were there to co-operate with the Corporation loyally and openly.

BENEFITS FOR OFFICERS AND SEAMEN OF THE MERCANTILE MARINE.

The Board of Trade have issued the following statement as to compensation for death or injury caused by war risks, and as to other arrangements made for the benefit of officers and seamen of British merchant ships during the war :—

Compensation for Death or Injury caused by War Risks.

Early in 1915 the Government decided that officers and seamen of British merchant ships should be placed in the same position as officers and seamen of fleet auxiliaries as regards payment of compensation for death or injury caused by war operations. A scheme was accordingly prepared and brought into operation early in 1915. It dates back to the beginning of the war, and in April, 1917, the amount that was being paid in pensions annually was over £70,000, apart from allowances for children, and payments under the Workmen's Compensation Act.

The scheme is non-contributory, and applies to every officer or seamen of a British ship whatever his nationality. It is administered on behalf of the Board of Trade by the War Risks Associations, and, except in the case of ships which are on Government service, a proportion of the cost is borne by the owners either directly or collectively through the clubs.

The basis of the scheme is that in case of death a pension equivalent to one-third of the pre-war rate of pay is paid to the widow, and one-twenty-fourth in respect of each child up to the number of four, up to the age of sixteen.

Since the scheme started various amendments have been made, such as the raising of the minimum pension paid to widows and the minimum allowances paid in respect of children, and the extension of the scheme to cover cases of disability aggravated by the war, or accidents caused by collisions due to vessels steaming without lights.

Dependants of Officers and Men interned in Germany.

At the beginning of the war, a scheme was established for making an allowance to the dependants of officers and men interned in Germany, either at the outbreak of war or through being taken prisoner subsequently. The allowance paid was half-wages or £1 a week, whichever was the less, and the scheme was worked in connection with the Government insurance scheme, the owners paying 20 per cent. of the cost and the Government 80 per cent.

The scheme has recently been amended so as to give the dependants of men interned in Germany the benefit of the scale paid to the dependants of men who lose their lives owing to war operations, where this is better than the original scale.

Insurance of Effects.

In March, 1915, the Board of Trade established a scheme by which officers and seamen of British ships could insure their effects against war risks. Insurance certificates were sold at the Mercantile Marine Offices at all the principal ports, at a rate of premium much below the real rate. Officers and men on ships on Government service were held covered without payment of premium, and in many cases shipowners insured the effects of the officers and men of their fleets.

It has recently been decided to place officers and men on all British ships in the same position as those whose ships are on Government service, and accordingly the effects of all masters, officers and men are now held covered against war risks without payment of premium. The maximum amount of compensation payable in the case of seamen and firemen has been increased from £5 to £7 10s.

Payment of Wages to Officers and Crews of Ships Sunk by War Perils.

Under the Merchant Shipping Acts the legal right to wages terminates on the loss of the ship, and though in many cases wages have been paid up to the date of the men's arrival in the United Kingdom, the practice is not uniform.

Arrangements have now been made to secure that every officer or seaman of a ship lost by war risks shall be entitled as a matter of right to one month's wages, or wages up to the date of arrival in the United Kingdom, whichever is the greater.

Special Railway Facilities for Officers and Seamen.

Arrangements have been made to secure that officers and men whose ships are diverted by the competent Naval authority from the normal discharge port in the United Kingdom to another port shall be able to travel to the normal discharge port free of charge.

Arrangements have also been made to enable officers and seamen who are discharged at one port and live in another port to travel to their home port at a reduced rate.

Special facilities will also be given as to the carriage of luggage.

Prisoners of War.

Lists are compiled of merchant seamen and fishermen detained in enemy countries, and these have been of great assistance to the Associations who send food parcels and other necessaries to these men.

Arrangements have recently been made to secure for mercantile marine officers in Germany the advantages of internment in combatant officers' camps. The necessary payments are made through the Netherlands Minister at Berlin.

Steps have been taken to encourage merchant seamen and fishermen interned in enemy countries or in Holland to study with a view to advancement in their profession, and members of the Board of Trade examining staff visited Groningen in August, 1916, and July, 1917, for the purpose of holding special examinations for Board of Trade certificates.

Silver War Badges.

Arrangements are being made for the distribution of the silver war badge to officers and seamen of merchant ships who, by reason of wounds received through enemy action or by reason of illness attributable to war service, are compelled to give up their employment in the mercantile marine.

Roll of Honour.

Arrangements have been made for publishing from time to time a roll of honour for the mercantile marine, giving the names of officers and men who have lost their lives owing to enemy action, or have been taken prisoner.

History of Mercantile Marine.

Arrangements have been made for a history to be written of the part played by the mercantile marine in the war by a well-known writer. The work has already been commenced, and the writer will have full access to the records of the Admiralty, Ministry of Shipping, and Board of Trade.

WORKMEN'S COMPENSATION PAYMENTS.

Note should be taken of the legislation which, after September 1, increases the weekly payments for total incapacity under the Workmen's Compensation Act, 1906, by one-fourth. Dissatisfaction with the present limits of these payments was recorded by the Commissioners into industrial unrest. The contention was that they ought to be raised in order to afford some equivalent to the recipient for the increase in the price of commodities. From that point of view there are undoubtedly cogent arguments to be advanced. Yet it is legitimate also to point out that they involve an additional charge on industry, and each additional charge has the effect of increasing the cost of production. It is another factor in the upward movement of prices. Without criticising the step that has been taken in this case, it is only proper to note the tendency which it helps to accentuate.

PROPELLING MACHINERY OF SS. "AURANIA."

In *Shipbuilding and Shipping Record* for May 10 we gave a supplement plate of the ss. *Aurania*, recently built for the Cunard Steamship Company, together with a brief description of the vessel. We are enabled now to give a more detailed description of the propelling machinery.

The propelling engines consist of two sets of turbines, each set driving a propeller shaft through mechanical gearing, the vessel being of the twin-screw type. It is contemplated that the power developed by the turbines will in the aggregate correspond to about 7,200 shaft horse-power in ordinary service at sea, the revolutions of the propeller under these conditions being about 100 per minute. The machinery has been constructed under the survey of the Board of Trade for a passenger certificate, it also complies with the Rules and Regulations for Lloyd's classification, and in addition will pass the American Survey.

Passing on to a more detailed description of the various units in the boiler rooms and engine room, reference, first of all, will be made to the boilers, which are four in number, arranged in two boiler rooms. The boilers are of the multitubular double-ended return tube type, 17 ft. 6 in. mean diameter and 20 ft. 9 in. over end plates. Each boiler is fitted with eight furnaces of the Morison suspension type, and with back ends suitable for easy withdrawal, a separate combustion chamber being provided for each furnace. The boilers have been constructed throughout so as to permit of a working pressure of 190 lb. per sq. inch being maintained. Superheating arrangements are fitted to all boilers, the special fittings for these, consisting of tube elements and headers, having been supplied by the North-Eastern Marine Engineering Company, Ltd., Wallsend-on-Tyne; all steam stop-valves through which superheated steam passes have cast-steel chests with steel fittings. Diamond blowers have been arranged in connection with each combustion chamber, with all fittings complete, and the Brundrit patent temperature balance has been fitted to each boiler for promoting automatic circulation of the water.

The whole of the boiler installation has been designed for working under natural draught conditions, and the furnace fittings have been arranged in accordance with the Cunard Company's special requirements, embodying such details as firebars of the "Trident" pattern and patent backbridges as supplied by Railton, Campbell & Crawford, Ltd. Two chimneys are provided, of elliptical section, and having an outer casing about 18 in. clear of the main chimney, the height of the chimneys being about 130 ft. above the base line. The uptakes and chimneys are fitted with division plates for each boiler, these being carried the full height of the chimneys so as to make the draught for each boiler independent. Sectional dampers are also provided in the uptakes for isolation purposes. At the forward side of the forward funnel is fitted a set of triple bell whistles in connection with a set of Willet-Bruce control gear, the whistles and gear having been supplied by T. Downie & Co., of Liverpool.

As previously mentioned, the vessel is arranged for twin-screw propulsion, the port and starboard lines of shafting being driven each by a set of geared turbine machinery. Each set consists of a high and low pressure turbine working in series and coupled to the pinion shafts by flexible couplings, the pinions being situated one on each side of the gear wheel, which in turn is coupled direct to the propeller shafting (see Fig. 1). The astern-going turbines are incorporated in the exhaust end of the low-pressure turbine casings.

The turbines are of the Parsons' design and of the impulse-reaction type, an impulse wheel being introduced as the initial stage in the high-pressure ahead and the high-pressure astern turbines to take the first drop in pressure. The impulse wheels are followed in each case by the usual reaction stages, while the low-pressure turbines consist entirely of stages of reaction blading.

The gearing (see Fig. 2) is of the double helical type, arranged with a spiral angle and depth of tooth, which experience has shown to be most suitable. The main gear wheel is constructed with a cast-steel central portion to which a heavy steel forged rim is attached. The pinions are of nickel steel. Central bearings are provided for the pinion shafts to ensure the necessary alignment being preserved. For the efficient and silent running of this gearing, it is essential that the lubrication arrangements should be as perfect as possible, and as a means to this end sprayer nozzles distributed at suitable intervals are arranged to spray the oil direct on to the engaging teeth, thereby providing a film of oil between the surfaces in contact. The shaft bearings for the turbines and the gearing are also arranged to work under a system of forced lubrication.

The rotating portions of the turbines, comprising the bodies of the rotors, and the spindle ends, are made entirely from ingot steel forgings. The turbine casings, which in the ordinary way would have been made entirely of cast iron, have in this case been constructed partially in cast steel, in order to withstand the superheated steam with which it is intended to work these turbines. Those portions of the turbines which are made in cast steel are the steam admission ends of both the high-pressure ahead and high-pressure astern turbines, similarly the material of the blading is partly of copper and partly of the usual brass mixture, the copper sections being fitted to the impulse wheels and the earlier stages of reaction blading.

The floor level at the starting platform is at about the centre line of the turbines and the whole of the manœuvring valves are supported on a pedestal suitably placed so that the control wheels on the valve spindles are at a convenient height for operating; the pressure gauges are also grouped in close proximity, the whole forming a compact and easily controlled arrangement. Pipe connections are taken from the valves to the steam strainers, which are directly attached to the turbines.

The thrust shafts, main line shafting and propeller shafts are of forged ingot steel, the strength of the shafting being considerably in excess of Board of Trade and Lloyd's requirements, and the propellers are of the built-up type with four manganese bronze blades to each, which are secured to the propeller bosses by Lowmoor iron studs and gunmetal cap nuts. The bosses are made of cast steel.

The condensers are of the Weir "Uniflux" type and are placed at such a level that the low pressure turbines drain into them; in this way the accumulation of moisture at the low pressure end of the turbines is reduced to a minimum; this arrangement also obviates the use of the somewhat objectionable overhead connecting trunk between the low pressure exhaust and condenser. Air pumps of the "Dual" type as supplied by G. & J. Weir, Ltd., are fitted to work in conjunction with the above condensers, the condensing plant being made capable of maintaining a vacuum of 28½ inches when the machinery is working under the sea service conditions, with the barometer at 30 in. and sea water at 60° F. Two centrifugal circulating pumps are fitted for supplying the circulating water to the main condensers. These pumps are each fitted with one single cylinder double acting enclosed forced lubrication engine, and have been supplied by M. Paul & Co., Ltd., Dumbarton.

The boiler feed pumps consist of two pairs of direct acting vertical pumps, each pair of pumps being capable of delivering the necessary feed water under ordinary service conditions, the feed pumps delivering the feed water through one large surface feed water heater of the multiflow type, which is designed to utilize the exhaust steam from the various auxiliaries. The feed pumps and feed heater are all of G. & J. Weir's well-known make, and all the pumps mentioned above have United States metallic packing fitted to the piston rods. A feed-water filter of the "Cascade" type as supplied by the Contraflo Condenser and Kinetic Air Pump Company, Ltd., is fitted, the filter tank being provided with the necessary float gear for controlling the feed pumps, the air pumps being arranged so as to deliver the feed water to this filter tank and the feed pumps to draw therefrom.

An auxiliary condenser of Weir's "Uniflux" design is fitted and is capable of dealing with the exhaust steam from the whole of the

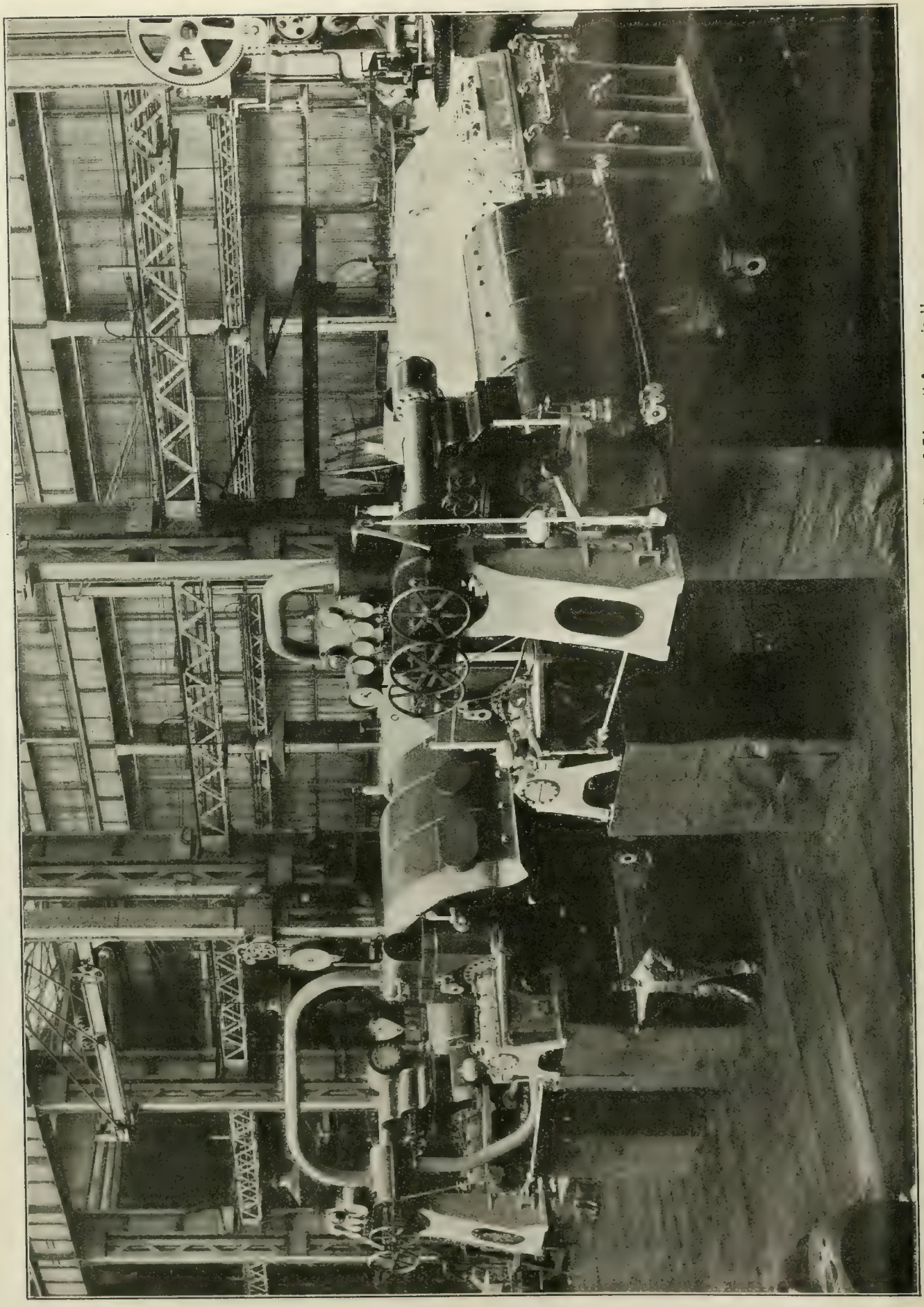


Fig. 1.—View showing the Two Sets of Geared Turbines for Cunard Liner "Aurania."

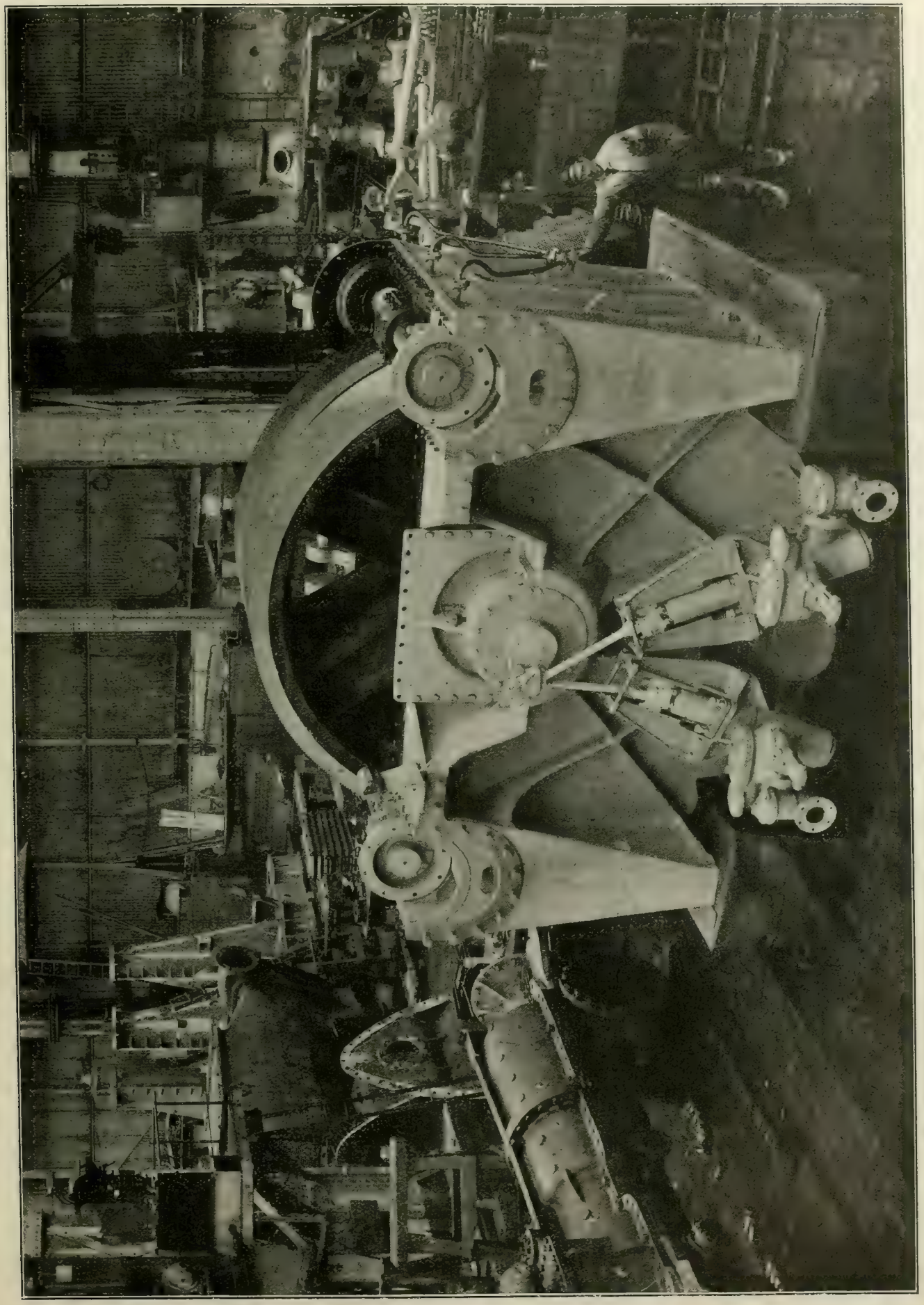


Fig. 2.—View of Turbine Gear for Cunard Liner "Aurania," showing Bilge and Sanitary Pumps driven from Gear Wheel.

auxiliary and deck machinery. This condenser is of the non-vacuum type, no air pump being required under these conditions. Circulating water for this condenser is provided by a centrifugal pump driven by a single-cylinder enclosed forced lubrication engine supplied by M. Paul & Co., Ltd. The condenser drains to a special tank having automatic gear which controls a vertical duplex feed pump, both tank and pump having been supplied by Thom, Lamont & Co. This pump delivers the feed water from the tank to the boilers through a discharge filter supplied by Railton, Campbell & Crawford, of Liverpool. Alternative suction connections from other pumps are also fitted to this tank.

In connection with the forced lubrication system there are fitted three single-cylinder direct-acting vertical pumps, which have been supplied by G. &. J. Weir, of Glasgow. These pumps are arranged with suctions to the oil drain tanks situated in the double bottom of the vessel and arranged to deliver through an oil cooler of multitubular design. The connections are such that delivery can be made either to gravitation tanks or direct to the gearing and turbine shaft bearings, the oil after use finally draining back to the tanks in the double bottom, whilst for supplying circulating water to the oil cooler, a duplex pump of the vertical type, as made by Thom, Lamont & Co., is provided and fitted with all the necessary connections.

Other auxiliary machinery fitted by the machinery contractors in the vessel comprises the following: Sanitary, bilge and fire pumps. Two of these, of the vertical duplex type, have been fitted with suctions from the sea and bilges and arranged to deliver overboard, and on deck for sanitary, wash deck, and fire service purposes. There are also a bilge and a sanitary pump worked from the end of the gear wheel shaft through a crank pin and connecting rod (see Fig. 2). The pumps have similar connections to those named for the duplex pumps. An additional bilge pump of the vertical duplex type has been installed in the forward boiler room, with connections to draw from the bilges and deliver overboard. The ballast pump is of the vertical duplex type, capable of discharging 200 tons of water per hour. This pump can draw from any forward and deliver into any after tank, whilst connections are made to enable the pump to perform various other duties. For dealing with the fresh water for washing and drinking water purposes, there are two pumps of the vertical duplex type, with suction and delivery connections as necessary. The whole of the above duplex pumps have been supplied by Thom, Lamont & Co.

The evaporating and distilling plant includes the following: Two evaporators, each being capable of producing 50 tons of water per 24 hours. The vapour from these evaporators can be taken by alternative connection to the condensers, low-pressure turbines, feed heater or distiller. The distiller is capable of condensing 50 tons of washing and drinking water per 24 hours at 65° F., with circulating water at 60° F. The evaporators and distiller have been supplied by Caird & Rayner, London. For providing the feed water for the evaporator a pump of the vertical single-cylinder type is fitted, this pump having been supplied by G. & J. Weir, Ltd., of Glasgow. A feed filter, supplied by Railton, Campbell & Crawford, of Liverpool, is fitted in the delivery pipe line of fresh water from the distiller. Circulating water for the distiller is supplied by a vertical duplex pump of Lamont's make.

The auxiliary machinery generally is made suitable for a working pressure of 190 lb. per sq. inch, and the air pumps and feed pumps are also suitable for working with a superheat of 50° F. The duplex pumps are capable of performing their respective duties with a working pressure of 150 lb. per sq. inch, and all pumps are large enough for their work when exhausting against a back pressure of 20 lb. per sq. inch. The water ends of the pumps in most cases are made of gunmetal.

The question of radiation of heat from external hot surfaces, extending from that of the boilers to exhaust and feed pipes, more particularly now that superheated steam is employed, has received careful attention, and all parts from which heat can escape have been covered with some form of non-conducting material.

A workshop has been fitted out in the discharge valve recess on the lower deck, and there has been installed a 6½-in. centre double-geared lathe having an 8-in. gap bed; this is of an improved self-acting sliding, surfacing and screw-cutting type. There is also a 30-in. double geared pillar drilling machine having a 2¼-in. spindle with 10-in. feed, either hand or automatic. In addition there is one 30-in. by 4-in. grindstone provided with fast and loose pulley. The foregoing machines are driven by a 3 h.p. totally enclosed electric motor suitable for 112 volts direct current shunt wound, whilst for transmitting the power from the motor to the machines the necessary counter shafts and pulleys are fitted. The whole of the above machines, together with the motor, have been supplied by C. Booth & Co., Liverpool.

For dealing with the ashes and other refuse that accumulates in the boiler rooms, there is provided in each of these compartments an 8-in. silent ash hoist, as made by Railton, Campbell & Crawford, of Liverpool. Special shafts are constructed independent of the ventilators for the above hoists. In addition the stokehold ventilators are fitted with a small windlass and chain.

The ventilation of the engine and boiler rooms has been carried out in a very complete and effective manner, and for both compartments the ventilating trunks below the casing top are built as part of the vessel's structure. For the engine room there are two trunks, each having a 48-in. diam. tube and cowl above the engine room casing, the cowl being turned by gearing from below. At the lower end of each trunk is fitted a 45-in. Keith open type centrifugal fan, provided with deflector. The fan is driven by a vertical shaft enclosed electric motor of Laurence Scott & Co.'s make. Each of the above fans when running at a speed of 600 r.p.m. is capable of dealing with 30,000 cubic ft. of air per minute. There being four stokeholds, each one is provided with two ventilating trunks, which are surmounted with 48-in. diameter tubes and cowls, turned by gearing from a lower deck level. The space between the inner and outer chimneys is arranged as the means of egress for hot air from the boiler tops.

In conclusion, we beg to acknowledge our indebtedness to the Wallsend Slipway & Engineering Company, Ltd., for their courtesy in furnishing us with the particulars and the photographs from which this article has been prepared.

TRAFFIC AND RECEIPTS OF MERSEY DOCKS.

A comparative statement issued by the Mersey Docks and Harbour Board shows that, during the year ended July 1 last, the number of vessels which paid rates to the Board decreased by 1,995 to 16,747, as compared with the previous 12 months. The total tonnage of vessels paying dock and harbour rates was less by 1,661,291 at 14,018,625. It is explained that this tonnage represents the total net tonnage of vessels paying rates inwards or outwards, and that to arrive at the total tonnage which entered and left the Mersey, it is necessary to double the figures for the past 12 months, which would then become 28,037,304 tons.

The total amount of the rates received on vessels was £739,376, an increase of £20,560, and the total amount of rates and dues on goods was £766,408, an increase of £16,466, giving a grand total of £1,525,784, an increase of £37,026. The rates on vessels include receipts on conservancy account and certain payments made by the Government in respect of previous years' transactions, but do not include further sums still in negotiation. It is recalled that, as from January 1 last, an increase of 25 per cent., in lieu of 10 per cent., was made in the dock tonnage and wharf receipts on vessels and dock rates and town dues on goods. Harbour rates were increased by 25 per cent. and dock rent was increased from 1d. to 2d. per ton per week throughout.

SHIPS AND SHIPPING.

The Prime Minister on Our Shipbuilding Output and the Submarine Campaign.

In the House of Commons, on Thursday last week, the Prime Minister made an important statement in response to an appeal by Mr. Kennedy Jones for a full statement on the food position and the cognate questions of shipping and shipbuilding.

In the course of his speech, Mr. Lloyd George stated emphatically that the Government had come to the conclusion—and they stated this not merely for the information of the people of this country, but for those whom it might concern outside—that with reasonable economy there was no chance for starving out the population of these islands.

The Prime Minister then went on to his next point, namely, the shipping situation. We quote the following from the official Report :—

Here the Germans have been very busy for their own purpose, for the very obvious purpose, in circulating statements and figures with regard to the destruction effected by their submarine campaign. They have circulated them in their own country, they have circulated them in Austria, they are circulating them in neutral countries, and they are circulating them even in countries which are allied to our own—they are doing it for a very obvious reason. They are doing it in their country to cheer up their own people. There is no doubt at all that they have given a very definite promise that by the month of August the submarine campaign would have effected such ravages on our mercantile marine that England, as they put it, would be out of the war. There was a definite promise to that effect given in the German Reichstag. Now they find that that is not true and there is a corresponding sense of discouragement in their own country and that has spread to other countries. The Germans are now preparing a set of figures, which they call official, on the authority of their Admiralty; they are circulating these figures throughout Germany and throughout Austria, figures as to the losses inflicted upon British shipping. The reason in their own country is quite clear. So is their purpose in other countries. There is no doubt that the pressure of the war is very great upon their population and the pressure is great upon allied populations—the populations which are allied to Germany—and they want to create a kind of impression that England, which is the most formidable enemy, in their view is the one enemy which is keeping this war going—that is the German view—they want to create the impression that in a very short time the damage inflicted upon our mercantile marine will be so great that we cannot last much longer, and the moment Great Britain is out of the war their view is that the whole of the Alliance will collapse.

The Tonnage Losses.

I am proposing to give the House some of the figures. My hon. Friend (Mr. K. Jones) wanted the figures with regard to the tonnage of losses. I have no objection in the least to giving those figures. The unrestricted submarine campaign began in February, and, as I pointed out, I think, early in the course of the year, there is an enormous advantage from the point of view of the assailant in being able to hit your ship without having to ask any questions as to the flag she carries or as to the cargo she carries. If they fire a torpedo at anything that appears on the surface, then undoubtedly their chance of doing injury to shipping tonnage is twice, at any rate, as great as it would be when they had to hesitate and to consider whether that was an American ship, whether that was a Dutch ship, or whether she by any chance should be a British ship, because it has got to be done instantaneously if it is done effectively. The moment the Germans came to the conclusion that they would destroy every ship that appeared on the surface of the deep, then the losses increased—they leaped—so that by the month of April we lost about 560,000 tons of shipping in a single month. Now I want to give the German figures. The German official figures claim that we are losing between 450,000 and 500,000 tons net—that is, after deducting the ships which we build every month, that our losses are 450,000 to 500,000 net. I give the worst month, and I begin with April. The 560,000 was gross, not net. Now came the Admiralty methods of dealing with the situation. There were several means which they devised for dealing with a very perilous situation, but they all had the effect of, first of all, giving more protection to our ships and of making it more dangerous for the submarine to ply its piratical trade. The result has been that the losses, which were in April 550,000 tons, in July came down to 320,000, which is a very considerable reduction.

Mr. Billing: Is that net or gross?

The Prime Minister: I am now taking the gross figures without deducting the ships which we are building. I am going to give the net.

Sir C. Seely: British only?

The Prime Minister: The German figures are for British only.

Mr. H. Samuel: Including mines?

250,000 Tons a Month.

The Prime Minister: It includes mines, but the losses from mines are not very considerable. The losses are mostly from submarines. This month—of course, it is early days yet—but judging the losses by what has happened during the past sixteen days, this month will be better than July; but I do not want to predict, I am only giving figures for the first sixteen days of August. There is an improvement and a substantial improvement, upon July in the figures of August. These are the figures, without deducting the tonnage which we have built. The net losses, according to the Germans, are 450,000 to 500,000 tons a month. Our net losses during the last six months, that is, since the beginning of the unrestricted submarine campaign, so far from being 450,000 to 500,000 tons, are under 250,000 tons per month. If the August figures continue at the same ratio of loss as we have experienced during the first fortnight, then our net losses during the months of July and August would be at the rate of 175,000 tons a month. That is, taking the whole of the six months, we have only lost half what the Germans claim. At the present rate we are only losing one-third of what the Germans claim. That is a very serious difference, and I should like to point this out to the House. The losses are diminishing, the building is increasing.

I come to the methods adopted to counter this submarine campaign. Those which are adopted by the Admiralty I do not propose to dwell upon. All I can say is that the figures, which show a constant improvement, are a demonstration of the fact that the Admiralty plans are increasingly successful. You have only got to look at the losses in April of 550,000 tons, when the days were shorter and when the seas were more tempestuous, and, therefore, when the work of the submarine was more difficult—the losses then were 550,000. You come to the month of July, when the weather conditions are the most favourable for submarines, and the losses come down to 320,000 tons; so that with regard to the methods adopted by the Admiralty, without going into them in detail—it would be obviously unwise that I should do so—the figures indicate that they are meeting with considerable success in their endeavours to deal with submarines. The measure of their success is all the more conspicuous when it is borne in mind that the number of submarines is increasing. In spite of that fact, the losses inflicted by them are diminishing, and have diminished very considerably as compared with three or four months ago.

Economising Tonnage.

I come to other methods for countering the submarine menace, measures of a different kind, measures which are undertaken by the Shipping Controller and by the organisations which have been set up for shipbuilding purposes. The Shipping Controller has succeeded in, first of all, reorganising the shipping of this country by means of

better loading, by taking ships off longer voyages and concentrating them on shorter voyages, and by turning ships round more quickly, so that they should be able to make more voyages in the course of the year. He has been able by those means to secure that, although we have a diminished tonnage, we have been able to carry more tons. I will just give you the figures. Our shipping in June and July of this year, compared with June and July of last year, is something like 10 per cent. down; and, as there is no diminution in the tonnage which is devoted to the carriage of Government material for our armies abroad, that means that the diminution in the tonnage available for ordinary imports is down not by 10 per cent., but by 20 per cent. In spite of that fact, we succeeded in carrying, during the period which I have indicated, 150,000 more tons in British ships to the United Kingdom. I think Sir Joseph Maclay is to be congratulated upon the business ability which he has applied to the solution of a very difficult problem.

Shipbuilding Figures.

In addition to that, he has taken steps for the quickening of shipbuilding. There were a good many ships on the stocks in this country at the outbreak of war, and even after the outbreak of war the shipbuilding firms started ships. For one reason or another, probably because of the pressure brought to bear upon them by the Admiralty to utilise their resources for the purpose of building craft for the Navy, many of those ships were not proceeded with. Sir Joseph Maclay has quickened the building of many of these, and in addition to that he has laid down a good many new ships. He has also ordered a good many ships abroad, and there is something I think I can give to the House in figures. In 1915 the tonnage built in this country was 688,000 tons. The tonnage built in this country during peace times is, I think, on an average something a little under 2,000,000 tons. Two million tons represents rather a good year. In 1915 the shipbuilding came to 688,000 tons. In 1916 it was 538,000 tons. In the first six months of this year it was 484,000 tons. But in the second six months of this year—this will include some purchased abroad—the new shipping acquired by this country will be 1,420,000 tons in six months. A little over a million tons—nearly 1,100,000 tons—will be built in this country, and 330,000 tons will be acquired abroad, so that this year the tonnage which we shall acquire will be 1,900,000 tons. That is a very fine achievement. Because I want the House to bear in mind the conditions in which that tonnage is built. It is the fourth year of the war. It is very difficult to get labour, and most difficult to get material, because you require steel for guns and shells for the Navy. You have got the shipbuilding programme of the Navy, which, as my right hon. Friend knows very well, has gone up very considerably in the course of the present year. You have got all these demands for steel, materials and labour. In spite of that fact the shipbuilding of the country in this year will not be very far from what it was in the days of peace. I think that that is a very fine achievement.

Colonel Sir Norton Griffiths: Are those figures exclusive of naval work?

The Prime Minister: Yes; this is purely mercantile marine. I am very glad that the hon. Gentleman has asked that question. In addition to that, there is a very considerable programme of additional naval construction which has been laid down this year. The tonnage of the naval construction this year will go up—I have not got the exact figures—but tremendously, by hundreds of thousands of tons. This shows what this country is capable of when it is put to the test. As my hon. Friend says, all we have got to do is to tell the people of the country what we need in order to win the war and they will do it. The House of Commons and the people of this country, and the people of Allied countries—yea, and the people of Germany—will now know what value to attach to this figure of from 450,000 to 500,000 tons per month loss of British shipping. That figure will narrow as we go along. I believe that the shipping losses will get less.

Shipbuilding to Increase.

One thing of which I am certain is that the shipbuilding will increase. But I do not want to underestimate the problem. It does mean that everything depends upon all those who are engaged in the shipbuilding industry doing their best. For instance, I asked to-day about the figures for August, and the Shipping Controller said, "I could give you the figures with trouble and the figures without trouble. If there is no trouble in the yards, I will tell you exactly what can be turned out." Everything depends upon everybody doing his very best, and, apart from that, it is quite impossible for us to fight the submarine menace, or any of the other great perils which are impending over this and every other country. It does mean also this: With all the shipbuilding which we can do, there is still a very considerable deficiency. Even now we have not got enough tonnage for all essential purposes. We have got to provide tonnage for France, Italy and Russia, as well as for ourselves, and we need more ships instead of fewer ships, and I am not going to pretend that there will not be at best a rate of diminution of our shipping which will embarrass us in the struggle, and therefore it is essential, not merely that this country should build, but that the other countries which have a great shipbuiiding capacity should also build. But if the United States of America puts forth the whole of her capacity—and I have no doubt from what I hear that she is preparing to do it in her own thorough and enterprising way—I have no doubt at all that we shall have sufficient tonnage, not merely for this year—about that there is no doubt—but for the whole of 1918, and, if necessary, for 1919 as well, because America can expand very considerably her shipbuilding capacity if the real need ever arises for her to do so.

DANISH SHIPPING SHARES.

Hansa finds no small pleasure in announcing that "the shares of the larger Danish shipping companies have fallen almost continuously this year, since the declaration of unrestricted U-boat war. This is quite distinct from the normal fall in quotation after dividend-day, and is quite explicable in view of shipping risks and losses. Expenses have risen so much that the splendid results of 1916 cannot be repeated; also, most owners have had a considerable part of their fleets laid up for some time and the aggregate effect in 1917 results will be serious. The highest quotations in Copenhagen were reached in September, 1916. A considerable fall occurred during October, and the minimum was reached about the middle of May, 1917. Since the end of May there has been a slight improvement which is probably only temporary, since there is not yet much ground for supposing the improvement in conditions to be permanent." As regards the latter assertion we hope and believe that—save for unavoidable fluctuations—U-boat statistics will continue to improve steadily from the Allies' point of view.

In connection with the following analysis, *Hansa* points out that all the shares mentioned, excepting those of the Torm, Skandia and Heimdal companies, were below par before the war:—

Owner.	Quotation (per cent.) on July 31, 1915.	Aug. 4, 1916.	Sep. 27, 1916.	Dec. 31, 1916.	Jan. 31, 1917.	May 16, 1917.
Forenede	164½	389	432	395	374	306
Torm	374	1,480	1,520	1,018	?	?
Danmark	178½	482	619	518	510	390
Nordeu	180½	481	663	546	512	460
Carl	205¾	580	767	551	550	452½
Dannebrog	271½	571	688	550	505	396
Skandia	235	930	946	800	?	?
Skjold	177	504	680	525	480	412
D.G. of 1896	234	530	681	526	480	374
Heimdal	212	685	770	660	610	490
Gorm	222½	700	890	717	635	510
Neptun	235	580	730	558	530	415
Danish-Russian Co. ...	?	360	440	358	330	301
Burmeister and Wain...	?	?	302	?	242	204

GENERAL NEWS SECTION.

PERSONAL.

Second Lieutenant Paul S. Turnbull, fourth son of Mr. Phillip Turnbull, the Cardiff shipowner, has been wounded in action. He is the proprietor of the Glamorgan Ship Store Company.

Rear-Admiral Salaun has been appointed French Director-General of submarine warfare, Rear-Admiral Merveilleux du Vignaux commander of the bases of the Eastern Division, and Vice-Admiral Charlier Maritime Prefect at Rochefort.

Captain Francesco Paolo Diliberto, Master of the Italian steamship *Tebe*, of Palermo, and Captain Lanfranco Marasciulo, Master of the Italian steamship *Dauno*, of Bari, has been awarded pieces of plate by the Board of Trade in recognition of their services to a shipwrecked British crew.

Mr. A. Munro Sutherland (Sheriff of Newcastle) and Mrs. Sutherland, gave a garden party, on August 17, to five hundred wounded soldiers in the Leazes Park. Mr. Sutherland, like other leading local shipowners, has taken a foremost part in the many good causes which have arisen out of the war.

His Majesty the King has given unrestricted permission to Mr. Charles Hipwood, C.B., Assistant Secretary, Marine Department, Board of Trade, to wear the Cross of Officer of the Order of the Crown which has been conferred upon him by his Majesty the King of the Belgians in recognition of his services in the present war.

In a recent list of honours for officers of the Navy and Mercantile Marine appears the name of Captain Bertram Fox Hayes, R.D., R.N.R., who is appointed to be a Companion of the Most Distinguished Order of St. Michael and St. George. Captain Hayes is in the employ of the White Star Line, and commands one of the latest of that company's liners.

Capt. A. R. Smiles, of Sunderland, has been presented with the Croix de Guerre by the French Government in recognition of his skill, courage and resource while master of the steamer *Dorothy*, which was torpedoed by an enemy submarine on February 23 last. The award was handed to Capt. Smiles by the Mayor of Sunderland (Alderman W. F. Vint) at a meeting of the local Marine Board.

The death has taken place in France of Mr. James Reid Campbell, of the firm of Ressich & Campbell, shipbrokers and naval architects, Glasgow. Mr. Campbell received his training in shipbuilding with the London & Glasgow Shipbuilding Company and the Fairfield Shipbuilding Company, and for some years was on the staff of the British Corporation Registry of Shipping. He was well known in Clyde shipbuilding and shipping circles.

Mr. C. S. Swan, a director of Swan, Hunter & Wigham Richardson, Ltd., the well-known Wallsend shipbuilders, presented awards for three conspicuous acts of bravery to an apprentice plater named Thomas Proctor Jensen. At different times Jensen jumped into the Tyne near Wallsend shipyard and saved a child, a boy and an old man (a labourer), and for these deeds of heroism he was made the recipient of the Tynemouth Medal, a valued decoration granted by a local Trust, and a silver watch and chain given by Swan, Hunter and Wigham Richardson, Ltd.

The death occurred on August 15, of Mr. Charles Edward Brightman, senior member of the firm of Turner, Brightman & Co., shipowners and shipbrokers, of 8 and 9, Great St. Helens, London. Mr. Brightman, who was well-known in London shipping circles was in 1909 President of the Chamber of Shipping of the United Kingdom. He was also a member of the Port of London Authority. In 1907 he was elected by the General Shipowners' Society a member of the Committee of Lloyd's Register of Shipping, and four years later was appointed Joint Chairman of the Sub-Committees of Classification with Mr. W. Lund. He was also one of the trustees of the society.

MINISTRY OF MUNITIONS.

Establishment of a "Munitions Council."

On account of the great increase in the work and staff of the Ministry of Munitions, and to secure closer organisation and the employment of more economical methods in dealing with the work of the department, a "Munitions Council" is to be appointed, and will consist of the Minister of Munitions, the two Parliamentary Secretaries to the Ministry, and representatives of groups of departments.

The first members to be appointed include Sir H. Hambling, Major-General the Hon. F. R. Bingham, C.B., Mr. J. Hunter, Sir E. Moir, Sir K. Price, Sir J. Stevenson, Sir G. West, Sir A. Duckham, Sir F. Black (temporarily Sir C. Ellis), and Sir S. Kent.

The following official statement was issued on August 20 :—

(1) In order that large questions of policy affecting all Departments may come before the Minister with the advice of a limited number of officers representing the whole Ministry and that questions affecting single Departments or groups of Departments may be speedily decided by the Minister or those to whom his authority may be delegated in accordance with his general policy, the following administrative changes have been approved :—

(2) A Council will be established, to be called the "Munitions Council." It will consist of the Minister as President, of the two Parliamentary Secretaries as Vice-Presidents, and of members each representing a group of the Departments of the Ministry, together with the secretary.

(3) The members sitting in Council will be representative of the Departments of the Ministry as a whole. The Council will consider such matters as may be referred to it by the Minister and any matters which may, with the Minister's approval, be brought before the Council by any member of the Council.

(4) The position of a member of the Council in relation to his group of Departments will be :—

(i) To superintend generally the work of the group and to consider in the first instance all important questions upon which the head of the Department requires assistance or rulings, such as those which would previously have been submitted to the Minister or through the Parliamentary Secretaries, and either to decide on the Minister's behalf such question, or to refer them to the Minister with a recommendation as to the decision.

(ii) To exercise such administrative functions through the heads of Departments in his group as are necessary to ensure that the policy of the Minister is carried out.

(5) Under rules approved by the Minister, important questions involving more than one group of departments will be considered at committee meetings and conferences which the members of the Council representing the groups concerned will attend. Failing agreement between the members of the Council, the question will be referred officially to the Minister for decision.

(6) Heads of departments will continue to be responsible for the efficient administration of their departments, and the necessary executive action will be taken by them, but all important questions, particularly matters which may affect general policy or other departments or which from their magnitude or novelty require financial sanction will be referred by them to the member of the Council to which their group is attached. No change in the organisation of a department or in important members of the staff will be made without similar reference.

(7) The member or members of the Council concerned will generally be present at conferences held by the Minister with heads of departments, or with associations, public bodies, &c.

(8) The Secretary of the Ministry will be responsible for the general administration of the Council Secretariat.

(9) A Council Secretariat will be established consisting of an assistant secretary and secretarial officers for each of the groups of departments, with a sufficient office and registry staff.

(10) The foregoing will come into effect from August 20.

Groups of Departments under Members of Council.

F. *Finance*	Sir Herbert Hambling.
D. *Design*	Major General the Hon. F. R. Bingham, C.B.
S. *Steel and Iron*	John Hunter, Esq.
M. *Materials, &c.*	Sir Ernest Moir, Bart.
X. *Explosives*	Sir Keith Price.
P. *Propellers, &c.*	Sir James Stevenson, Bart.
G. *Guns*	Sir Glynn West.
E. *Engines*	Sir Arthur Duckham, K.C.B.
A. *Allies*	Sir Frederick Black, K.C.B. (Temporarily Sir Charles Ellis, K.C.B.)
L. *Labour*	Sir Stephenson Kent, K.C.B.
S. *Secretariat.*	

PORT OF LONDON AUTHORITY'S NEW GRAIN STORAGE SCHEME.

Having recently reviewed, in the light of probable future requirements, the question of the facilities for the discharge and storage of grain, the Port of London Authority have just approved an important scheme of extension to which effect is to be given after the war.

The site selected for the proposed new accommodation is between the South-West India and Millwall Docks, where already the greater portion of the grain business is carried on.

Here three of the new quay berths already sanctioned will be equipped for the discharge of general cargo, with the addition of overhead bandways running the whole length of the quay in which will be placed the bands for conveying grain. The grain will be discharged from ships by eight portable pneumatic elevators placed on rails on a balcony in front of the sheds. These elevators will be capable of travelling the whole length of the quay without interference with the cranes for discharging ordinary cargo. Grain will be transferred from the ship to a receiver on the balcony and thence by bucket elevators into weighing machines immediately above the sheds. From the weighing machines it will be conveyed by shoot on to any of the eight bands to be provided for delivery into adjacent granaries, or, if desired, direct to any of 12 weigh-houses along the water's edge for immediate discharge to barges. Each of the eight bands will be capable of conveying 120 tons of grain per hour or 960 tons in all.

Water frontage for the delivery weigh-houses will be obtained by the construction of a special barge dock with a depth of 20 ft. of water.

The most important section of the work will be the construction of a reinforced-concrete silo granary with a total capacity of 40,000 tons immediately to the west of the existing central granary. It will be possible to increase the storage accommodation of the silos by an extension at the southern end, whilst further floor storage can be provided by an extension of the central granary in a similar manner.

Ample facilities will be provided for the turning over of grain out of condition, and the equipment will include a special thermometer installation, dryers and coolers, graders, separators, winnowing machines, weighing machines, sacking machines, telephone and signalling apparatus, and fire appliances.

At pre-war prices the total cost of the complete scheme is estimated at £509,300. Under the scheme the machinery for handling grain at many of the smaller existing granaries at the Surrey, Millwall and Royal Victoria Docks, is to be brought thoroughly up-to-date at a pre-war estimated cost of £72,800.

American Oil Tankers.—According to the *Wall Street Journal* the operation of American oil-tankers is so profitable that they pay for themselves in two or three trips—indeed, one large tanker is said to have earned her cost in one trip across the Atlantic. There is a great scarcity of oil-carrying vessels, and the profits are proportionate to the risks taken. It is now practically impossible to obtain construction of new tankers in the United States, owing to the Government's need of all available shipyard capacity.

FROM OUR CORRESPONDENTS.

CLYDE AND DISTRICT.

(From Our Own Correspondent.)

Open Space for Port Glasgow.—An interesting proposal was made to the Town Council of Port Glasgow last week, which, if carried into effect, will greatly improve the amenities of the town. Messrs. Lithgow, of the shipbuilding firm of Russell & Co., have outlined a scheme for the purchase of Port Glasgow harbours for the purpose of filling up the East and West Harbours, so as to form them into an open space with a frontage to the Clyde, to be handed over to the town as a free gift, and retained as an open space for the community of Port Glasgow. The Town Council have entertained the proposal favourably, and they have also tendered their thanks to Messrs. Lithgow for their generous action in widening one of the principal thoroughfares of the town while they were reconstructing one of their shipyards. At that time Messrs. Lithgow erected a handsome memorial of the *Comet*, the first European steamship which was built at Port Glasgow in the yard now occupied by Russell & Co.

New Shipbuilding Association.—With a view to promoting the interests of the smaller shipbuilding firms in the North of Scotland an association has been formed. The organisation is supported by shipbuilding interests at Peterhead, Lossiemouth and several other ports in Banffshire, Aberdeenshire, and Morayshire. Mr. George Forbes, Sandhaven, has been appointed the first chairman, and Mr. D. F. A. Watt, Banff, is the secretary and treasurer. The shipbuilding industry, both in steel and wood, is one of growing importance in the district. The class of vessels built is, for the most part, fishing craft, including steam drifters, sail and motor fishing boats, and motor launches. It is anticipated that when the war is over there will be a great demand for vessels of the types mentioned, and an association such as has just been inaugurated should prove of great service to the industry.

New Shipyard at Leith.—It is reported from Leith that John Cran & Co., shipbuilders, have acquired from the Leith Dock Commission a piece of ground which they intend to utilise as a shipbuilding yard. The ground which formerly belonged to the East Coast Salvage Company is very suitable for this purpose, as vessels built on it can be launched into the open sea. Consequently, larger vessels can be constructed than in the firm's present yard. Preparations are being made for the laying out of building berths on which vessels up to 300 ft. in length can be constructed. It is understood that the first steamer to be laid down in the new yard will be for a leading firm of Leith shipowners.

Glasgow Seamen's Wages.—One of the first applications from Scotland to come before the recently appointed Mercantile Marine Conciliation Committee is a request from the Glasgow Branch of the British Seafarers' Union for an all-round increase on present rates of wages to the extent of 25 per cent., and for a revision of all existing wages agreements. The application is made on the ground of the high cost of living. Since the war began several advances of wages have been made to seamen at Glasgow, the amounts varying according to the trade in which the men are engaged. The demand now put forward for an increase of 25 per cent. is made on behalf of all men, whether engaged on liners, tramps or coasting steamers, or whether employed as shore gangs working on board ships while in port. The Committee to which the application has been remitted was appointed recently by the Minister of Shipping, for the purpose of preventing disputes arising between seamen and shipowners, and for the settlement of such disputes when they do arise. The Committee are also empowered to take steps with a view to securing the general improvement of the conditions of service in the mercantile marine.

NORTH EAST COAST.

(From Our Own Correspondent.)

Boilermakers' Society and Need of Ships.—Trade Union leaders, in the main, have consistently urged their members to go on increasing production to meet the needs of war time, but their exhortations are apt to lose something of weight by an added afterthought of a more or less superfluous kind. In his August report, the general secretary of the Boilermakers' Society reminds the

members of the insistence of the Admiralty and of the Premier for ships and ships and still more ships, and points out that the return of these ships depends more on the members of his Union than on anybody else. Mr. Hill says: "The Admiralty have asked for another 100,000 men to help in this work, as we must enormously increase our output if we are to fight successfully the U-boat menace. I hope, therefore, that our members realise how great the issues are which depend on their efforts, and that overstrained and war-weary as they are, they will continue to give the most and the best of the special craftsmanship in the same cause for which they have given the blood of so many near and dear to them." All that the men are asked to do at this critical time is to work the regular hours and well. Lost time in the shipyards has not been eliminated even now, when tonnage is more urgently needed than ever.

Increased Labour Representation.—As a result of the redistribution of Parliamentary seats, consequent upon the recent work of the Boundary Commissioners and the operation of the Representation of the People Bill, it is quite likely that Labour will seek to increase its representation in the House of Commons. Newcastle, for example, is to send four members to Parliament in future instead of two, and the constituencies have been so mapped out as to offer two good chances to Labour, one at the east end and the other at the west end of the town—both industrial districts. The new circumstances may have had something to do with a decision of the Executive Council of the Boilermakers' and Iron and Steel Shipbuilders' Society in recommending that the general secretary, Mr. John Hill, be one of the Union's forthcoming Parliamentary candidates, in addition to the five already settled upon—that is, one from each of the Executive Council districts. The members of the Society are to vote upon the proposal at the branch meetings next month.

Labour Unrest.—One of the findings of the Commission on Labour Unrest, to the effect that "Trade Union leaders are distrusted," affords a theme on which the Boilermakers' general secretary is induced to make some comments in his report to the members this month. He regards the distrust of the men in their own chosen leaders as "the most serious finding," and goes on to say that the restoration of confidence within the Trade Unions was one of the things that they must do for themselves. If it should be necessary for each trade unionist to lose an hour's work each month to attend his monthly meetings, then he must lose that hour to do it. At the head of Trade Union organisations it is usual to find a strong political bias, and in the lesser positions there are, not infrequently, a noisy section of militants who attend conferences and purport, by citing numbers, to represent the rank and file, whereas the latter are either indifferent or openly resent being told that their views are reflected by what the few may claim to be the opinions of the society as a whole.

MERSEY SHIPPING AND SHIPBUILDING.

(From Our Own Correspondent.)

Shipowner's Munificence.—Mr. Joseph Hoult, the well-known Liverpool shipowner, has celebrated the attainment of his 70th birthday with a distribution of £70,000, mostly to Liverpool institutions and charities. Of this total, £30,000 is allocated for the benefit of mercantile marine engineers and firemen, and the mercantile marine service Association is invited to undertake the management of the fund with a view to its proper administration. Distributions to other institutions connected with shipping include the *Indefatigable* training ship, £2,000; the Liverpool Shipbrokers' Benevolent Society which Mr. Hoult founded, £3,000, the interest on which is to be applied to make an additional grant at Christmas each year equally amongst the annuitants; Liverpool Seamen's Orphanage, £1,000; the Lancashire and National Sea Training Homes for Boys, £1,000; Shipwrecked Mariners' Society, £250; Liverpool Shipwreck and Humane Society, £250; together with £5,000 each to Edgar Wilkinson and Robert H. Jones, both "very old and esteemed employees" of Mr. Hoult.

In making the gift to mercantile marine engineers and firemen, Mr. Hoult observes:—"They have played a most important part in the work of the mercantile marine for years, and especially so during the war. It is desirable, and I think necessary, that their services should be fully recognised—in fact, in no less a degree than shipmasters, officers and seamen. The direction the course of events is taking indicates, to my mind, that the services required of them will be even more important in the future than in the past."

Strike of Boilermakers.—Roughly speaking, about 7,000 boilermakers in the Mersey shipyards and engineering shops came out on strike on Friday, and they threaten to remain out until such time as the Government has given a rehearing of the June award. This was in respect of an application made to the Mersey Ship Repairers' Federation in April for a further advance of 5s. per week in their wages which was "turned down" by the Committee on Production. The Minister of Labour has stated that the award must be worked under for a reasonable period, but instead, a meeting of the Merseyside boilermakers decided on the previous day by 1,731 votes to 89, to come out on strike. The strike has been declared an illegal one under the Munitions of War Act.

Handling of Cargo.—Mechanical appliances for further facilitating the handling of cargo are to be provided at some of the Liverpool docks. According to an official notice which has been issued by the Mersey Docks and Harbour Board to berth holders, it is pointed out that the Board is being pressed by the Government to facilitate the introduction of such appliances, and that they are ready to make the provision in the interests of the port. The Board is prepared to lay down its own installation for electric current, failing satisfactory arrangements being made with the Corporation of Liverpool.

Awards and Income Tax.—Sir Norman Hill has declared that if the monstrous claim of income tax on awards to merchant service captains for their courage or success in dealing with submarines is persisted in, the Liverpool Steamship Owners' Association, of which he is secretary, is ready to contest every case in which the time for appeal is open.

SOUTH WALES NOTES.

(From Our Own Correspondent.)

State Control of Shipping.—Mr. W. H. Seager presided over a meeting of the Cardiff and Bristol Channel Shipowners' Association. A wide range of important subjects was under consideration. The question of State control of shipping was the chief item before the meeting, although most of the items on the agenda had reference to this matter. Members expressed the view that although all were desirous of doing everything possible to facilitate the working of the ships by the Government, shipowners should be given sufficient financial consideration by the authorities to enable them to make both ends meet. Under present conditions, they contend, this is practically impossible. In view of the seriousness of the position in which shipowners found themselves under the present circumstances, and the desire to discuss fully the grave issues involved, it was decided that no resolutions should be passed at that meeting, but that it should be adjourned and another opportunity be given to all members to express their views before arriving at any definite conclusions.

Bristol Channel Shipbuilding Industry.—In the August report of the Amalgamated Society of Engineers, the district delegate for the Bristol Channel states that trade is quite normal, with limited overtime. Working is not up to expectations forecasted by the Admiralty in its scheme for speeding-up with payments by results. With regard to work at Chepstow the report states that "a good deal of friction is manifest by men of various trades by the forcible introduction of North-East Coast practices and customs into the shipyard. Stoppages of work are too frequent for the common good, disputes seemingly never ending, men coming and going through discontentment. The management as yet fail to realise and give respect to local practices and customs that have stood the test of half-a-century at the same works with contentment to all concerned. If the new company desires to have men around them to settle down at the works they will most certainly have to respect local views and consideration." The Committee on Production has decided that the overtime payment stopped by the management out of the advance in wages given in January, a stoppage retrospective from July 14, 1916, must be paid to the men, and the old rates of overtime continued." This decision shows that even the wage department of the Ministry of Munitions is not entitled to make changes without consultation with the men concerned.

Cardiff Seamen and Stockholm Conference.—Captain Tupper addressed a gathering of over 3,000 workers at Cardiff. A resolution was passed repudiating the vote at the Labour Conference to send delegates to Stockholm, and accorded support to the National Seamen's and Firemen's Union in their demand for a referendum.

Captain Tupper, in the course of a powerful speech, said, "even if the Government be forced into the position of giving them passports, we are not taking them." There was an extraordinary demonstration of unanimity when the resolution was put to the meeting and carried.

Pitwood Workers' War Bonus.—The Monmouthshire and South Wales Coal Freighters' Association and the Bristol Channel Pitwood Importers' Association have jointly considered an application from the Dockers' Union for a further increase of 25 per cent. in the war bonus paid to the pitwood workers. An offer of a bonus of 15 per cent. has been made to the men and refused by them, but it is understood that the latter are willing to compromise for 20 per cent. Negotiations are still proceeding.

Riverside Improvement at Newport.—The Newport Corporation have decided to expend £800 in the formation of groins on a certain part of the River Usk where the bank has suffered greatly from erosion. This experiment will, it is hoped, prevent further subsidence, and thereby be the means of saving a possible outlay of £6,000 to £7,000 The work has been advised by an expert. Already the Corporation have expended about £5,000 on the scheme.

Arbitrator's Award to Barry Docks Riveters.—Mr. A. J. David, K.C., was appointed arbitrator to determine an application for an advance of 50 per cent. on piece work rates made by the Boilermakers' and Iron and Steel Shipbuilders' Society on behalf of riveters and holders-up employed by C. H. Bailey, on the steamers *Normanton* and *Winonia* in Barry dry dock. At the hearing an agreement was arrived at whereby the arbitrator was to adjudicate upon the claim made for compensation for the way in which the work was commenced and altered, an alleged conversion from day rate to piece rate, and in his award of June 30 he granted £2 for compensation to each riveter and £1 10s. to each holder-up who was employed on June 4 and still employed on the *Winonia*. The agreement also fixed the rates for drilling and punching steel rivets and for re-riveting on the two steamers concerned.

THE FREIGHT MARKETS.

(From Our Own Correspondent.)

London.—Chartering business on the Baltic Exchange continues to move on quiet and steady lines. The pressure for tonnage is maintained from the East and the Northern Range ports, while Virginia coals are also offered at good rates to the River Plate. Homeward from the Plate, rates are nominal at 145s. from the up-river ports, and 5s. less for down-river loading. The ports on the North American Atlantic seaboard require neutral tonnage on net form of charter for which 200s. is offered to the United Kingdom, 225s. to the French Bay ports, and 360s. is reported to have been done to Italy. Gulf loading would come at 30s. more. For heavy grain, 30s. is offered to the United Kingdom, and 2s. 6d. more to France, while for oats to the United Kingdom the standard rate is 25s. Coals to the Plate from Virginia are worth fully 125s. The Eastern section of the market is very strong. Karachi would pay 250s. on scale basis to the United Kingdom, Bombay on deadweight would concede as much as 275s. to the same destination, or 400s. to the Mediterranean. From the Madras coast 500s. can still be obtained for kernels to Marseilles. The rice ports are also badly in need of tonnage, and probably 485s. to 490s. could be had from Burmah to the United Kingdom, or 500s. to France from Saigon. Salt business offers at 50s., Torrevieja to Calcutta. In the Mediterranean section of the market rates are on the basis of 45s. Huelva to the Mersey, or 60s. to the East Coast, United Kingdom; 50s. Bougie to the Clyde, and 65s. from Tunis to the same destination, and 70s. Sfax to Bristol Channel. In the Bay trade, Bayonne to the Bristol Channel has been done at 22s. 6d., and Bordeaux to the same destination, 20s.

Glasgow.—Conditions on the local freight market remain practically unaltered from our report of last week. The inquiry for boats is good, but owing to the scarcity of tonnage for general trade, business continues to be largely confined to the limitation trades where full standard rates were repeatedly offered. Outside of the control scheme there have been few offers of tonnage to test markets, and values are for most part merely nominal. In the Atlantic trade there was a strong demand from America, and a fixture was reported as follows:—States to River Plate, about 110s., September. In other directions rates while firm remained stationary, with very little business passing.

Newcastle-on-Tyne.—With a continuance of the dearth of tonnage on offer in the local freight market, fixtures have been few and far between, albeit rather more activity in coal shipping is being displayed. The latter fact is due to the circumstance that Scandinavian coal consumers have been making quite considerable purchases during the last few days and have sent over their own tonnage to convey the cargoes thus bought. Apart from this influx of already-booked shipping, there has been little cargo space on offer, although the demand for transport facilities is as clamant as ever and the rates offered would have been regarded in any pre-war period as representing wealth beyond the dreams of avarice. Thus, up to 220s. is being offered for Barcelona, 100s. for Oporto, and 200 kr. for any Norwegian port. Coasting business has been done at 15s. to London. A good many coke-carriers for Northern France have been taken up at the scheduled rates, but many more are needed in order to supply our Gallic allies with their full requirements of coal and coke. The French port of Isigny, which, somehow, is not included in the schedule, has been fixed for at 60s. for a 400-ton vessel. A 6-7,000-ton steamer has been taken up for part cargo for Port Said at the sensationally high figure of 200s. A 1,500-ton vessel for Stockholm has been chartered at 207½ kr. (in the neighbourhood of £11 10s. per ton). The Northumberland steam coal collieries are being very badly hit for want of tonnage, and many of them are idle or working very short time. Durham collieries, too, are affected but not to the same extent, inasmuch as there is a good volume of home trade being done for gas coals, &c.

Liverpool.—Business in outward freights is limited to the very small amount of tonnage offering, though very attractive rates are obtainable by neutral ships to non-limitation ports. Especially is this the case at the coal ports, and only a few fixtures are possible to allied destinations. The scarcity of suitable boats make time chartering very slow, but a boat of 2,000 tons d.w. has been fixed in the States-West Indies trade for three months at 35s., owners paying insurance. Business done in homeward freights is also on a very limited scale. Eastern markets are still unable to get free tonnage, and in the absence of fixtures values are mostly nominal. Only in the North American trade is there any movement, and this is mainly in respect of net charters. Tonnage on net form is still in request, and up to 360s. has been paid from Northern Range to West Italy for a 4,000-ton d.w. boat August-September. Net charter boats are wanted to United Kingdom at 200s. and to France at 220s. from Range, with an addition of 30s. for loading in the Gulf. River Plate homewards keeps nominal at 145s. up river.

Cardiff and Swansea.—Outward coal chartering has been a little brisker. Though tonnage keeps fairly plentiful for the requirements of the authorities, there is not much available for other purposes. The bulk of the business reported has been for allied ports at scheduled figures. Rates for all neutral destinations have ruled at high figures, especially for Spain, but there has been little disposition to arrange fixtures for this direction pending more settled conditions in that country. The following fixtures were reported for French ports:—Cherbourg, 48s. 9d. (neutral); St. Malo, 43s. 6d. (neutral); Caen, 72s. 3d., coke (neutral); Rouen, 48s. 9d. (neutral); St. Nazaire, 29s. (allied) and 61s. 6d. (neutral). On the Swansea market firmness has been manifest in quotations for all directions, but little business has been transacted owing to lack of tonnage offers. Fixtures reported were:—Belfast, 17s.; Guernsey, 40s.; Boulogne, 50s. 3d. (neutral); Havre, 45s. 9d. (neutral); Chantenay, 61s. 6d. (neutral); Morlaix, 160 fr. for a small sailing vessel; Rouen, 48s. 9d. and 50s. 3d. (neutral); tonnage Charente, 31s. 9d., fuel (allied) and Port Talbot to Rouen, 49s. 6d., fuel (neutral).

THE COAL MARKETS.

(From Our Own Correspondent.)

The miners' Bank Holiday rest produced the anticipated effect in the coal trade of the country, the supply, for the time being, ceasing, and thus allowing a needed reduction of stocks, which in some cases have tended to become excessive. The demand, too, has increased, chiefly owing to an extension of requirements by the authorities, so that the trade has been in a brisker condition than has been the case for some weeks past.

Prices have, in the main, remained firm, and there is no present indication of any alteration. If the export business still leaves a good deal to be desired, the home requirements for all classes of

coal are persistent. A fairly brisk trade has been done in large steam coals, and households, too, are moving off freely, while smalls are readily taken up.

The bunker trade, though not considerable, has brightened up, owing to the rather better movement of shipping. There is plenty of bunker fuel at the principal coal exporting ports, but it is being drawn upon, and there seems no immediate prospect of a slump in this particular commodity.

On the North-East coast plenty of Durham bunker coal can be had, the values ranging from 24s. to 25s. for bests, to 16s. 3d. to 24s. for ordinaries. There is, however, no surplus of special bunker coal for export, and this class of fuel continues to command 30s. At the South Wales ports bunkers are in a tolerably firm position, and the prices range from 21s. 6d. for ordinaries to 23s. for bests.

Conditions on the coal markets of the North-East coast vary not a little from day to day, and this irregularity militates against a large amount of business being transacted. Some collieries are well placed as regards the volume of available tonnage, while others less fortunately situated have great difficulty in keeping going on full time. There is no dearth of fuel, and were the tonnage supply much larger a brisk trade could be done. For the best class of large steams the demand is well maintained, but second steams and smalls are much easier. Gas coals are well sold, though there is less pressure for household fuel. Norwegians have been in the market.

Approximately, quotations are for best Blyth steams, 30s., and smalls 20s. to 21s. 6d.; Tyne primes, 25s., and smalls, 20s. to 21s. 6d.; second quality steams, 25s. to 27s., and smalls, 18s. 6d.; unscreened steams, 24s. to 25s.; North Northumberland steams, 28s., and smalls, 20s.; smithies, 29s. 3d.; nuts, 24s. 6d. to 26s.; gas coals, 23s. 6d. to 25s.; coking coals, 17s. to 25s.; house coal, 28s. 6d. to 30s.; best bunkers, 24s. to 25s.; ordinaries, 16s. 3d. to 24s., and specials, 26s. 6d. to 30s.; foundry coke, 42s. 6d., and blast furnace coke, 28s.

At the South Wales ports, operators are principally engaged in carrying out contracts. There is only a small amount of new business. The Authorities are taking large supplies of the best-class steam coal, and most other classes of fuel continue to move off pretty freely, though cargo sorts are without animation. Patent fuel is in considerable demand, which is for the time being greater than the supply.

Quotations are for Best Admiralty large steams, 33s., and seconds, 30s. 9d. to 31s. 6d.; ordinaries, 30s.; drys, 30s.; bunkers, 21s. 6d. to 23s.; cargo smalls, 18s. to 20s.; best large black veins, 30s.; Western Valleys, 29s.; Eastern Valleys, 28s. to 29s.; washed nuts, 28s. 6d. to 30s.; No. 3 Rhonddas, large, 30s. 9d., and smalls, 26s.; No. 2 Rhonddas, large, 27s. and smalls, 20s.; house coal, 30s. 9d. to 33s.; patent fuel, 30s. to 32s. 6d.; and pitwood, 58s. to 60s.

Quiet conditions continue to rule in the Scottish coal markets. Export trade remains very restricted, and, as a consequence, the collieries are not all working full time. This is the case notwithstanding that there is a considerable inland demand. In Fifeshire there is a good demand for navigation coal, but the Lothians are almost apathetic.

In splints, the ruling quotations are 28s. to 30s.; Hartley's, 29s.; Ells, 26s. 6d. to 28s.; screened navigations, 28s. to 30s., and unscreened, 23s. to 25s.; steams, 27s. 6d.

On the Hull coal market there has been a pressing demand for gas and house coal, and steams have also been freely taken up. A large trade is being done with France, but the neutral export trade is very small. The inland requirements show no signs of being satisfied, and there is considerable pressure for steam fuel and all classes of smalls.

The stoppage of work at the pits did not have a very appreciable effect on the Midland coal trade, as the industrial works were also closed for the August Bank Holidays. The trade has now been revived and continues with great animation. House coal is largely in request from the South of England, and steam coal, both large and small, is moving off in considerable volume.

The London coal market still has cause to complain of inadequate supplies. Some merchants have been in the fortunate position of being able to get nearly all the coal they require, and have not only supplied their customers' wants, but have added to stocks. In other cases, orders of long-standing remain unfulfilled. Generally speaking, the market could absorb considerably more coal than is coming forward, though the position is not nearly so bad as it was last year.

COMPANY REPORTS AND DIVIDENDS.

Penarth Harbour, Dock and Railway Company.—The directors propose the usual dividend to June 30, 1917, at the rate of £5 5s. per cent. per annum payable on September 6.

Griffiths-Lewis Steam Navigation Company, Ltd.—The directors have declared a dividend of 7½ per cent. (actual), free of income-tax, payable on August 28, in respect of trading from September last.

Spillers & Bakers, Ltd.—The directors have declared a dividend at the rate of 6 per cent. per annum on the preference shares for the half-year ending August 31, less income tax, at the rate of 5s. in the £.

Empire Transport Company, Ltd.—The directors announce a dividend of 7½ per cent. and bonus of 1s. per share on the ordinary shares, making 25 per cent. for the year; £35,000 is placed to insurance fund, and £13,479 carried forward.

Redcroft Steam Navigation Company, Ltd.—The directors have declared an interim dividend for the half-year ending July 31, 1917, at the rate of 10 per cent. per annum, free of income tax. Dividend warrants will be posted to the shareholders on August 31.

Tyne-Tees Steam Shipping Company, Ltd.—The profits for the past year were £21,849, and £14,435 was brought forward. An interim dividend of 5 per cent. has been paid, and it is proposed to add £14,260 to reserve, and to carry forward the remaining £7,077. The steamers *Sir William Stephenson*, *Claudia*, and *Grenadier* were lost during the year, and the directors regret they cannot recommend a further dividend owing to the lessened revenue in the last six months, enhanced cost of insurance, and increased wages and working expenses. The dividends and bonus for 1915-16 amounted to 20 per cent., while 10 per cent. was paid for each of the three preceding years.

Anglo-Belgique Shipping Company, Ltd.—The directors have issued the first annual report of the company covering the period from March 4, 1916, to April 30, 1917, together with dividend of 1s. per £1 share free of income-tax, making, with the two interim dividends paid (on July 8, 1916, 1s. 3d. per share, and on December 4, 1916, 1s. per share respectively) 3s. 3d. per £1 share, equal to 16¼ per cent., free of tax, or nearly 22 per cent. gross. The balance to credit of profit and loss is £18,224, out of which the above dividend will absorb £1,673, leaving the balance to cover the inland revenue claim for income tax and excess profits duty, which will, it is expected, absorb the greater portion of it.

Humber Graving Dock and Engineering Company, Ltd.—The report for the year ended June 30 shows that the net receipts amounted to £23,111. From this has to be deducted administration expenses, rent, rates and insurance, bank, &c. interest, leaving a surplus of £17,402, out of which the directors have transferred to reserve account to cover, *inter alia*, the liability (if any) for excess profits and munitions levy for year to June 30, 1917, £8,402; interim dividend of 4 per cent. per annum, paid in March, 1917, £3,000; leaving a balance of £6,000, which the directors recommend should be appropriated as follows:—Final dividend of 6 per cent. per annum, less income tax, making with interim dividend already paid 5 per cent. for the year, £4,500; payment to Humber Commercial Railway & Dock Company under agreement, £1,500.

Swan, Hunter & Wigham Richardson, Ltd.—The directors, in their report, state that, after providing for depreciation on buildings, plant, and machinery, and for income-tax, munitions levy, &c., there remains a net profit of £313,753, to which has to be added the balance brought forward of £43,576, making a total of £357,329. Out of this sum is provided interest on 4¼ per cent. first mortgage debenture stock for the year ending December 31, 1916, £15,312, and instalment for sinking fund, £1,000, leaving a balance of £341,016, which the directors recommend should be appropriated as follows:—Interim dividend at 2½ per cent. on cumulative preference shares, paid August 31, 1916, £18,496; interim dividend at 2½ per cent. on ordinary shares, paid August 31, 1916, £21,388; further dividend at 2½ per cent. on cumulative preference shares, paid March 1, 1917, making 5 per cent. for the year, £18,496; further dividend at 10 per cent. on ordinary shares, paid March 1, 1917, free of tax, making it 12½ per cent. for the year, £85,553; transfer to reserve, £100,000; reserve for special depreciation, £50,000; leaving a balance to be carried forward of £47,082.

International Mercantile Marine Company.—The report for the year 1916 possesses particular interest by reason of the changed fortunes of the company. The directors state that the combined income account shows a surplus of $25,946,650, after meeting all fixed charges and operating expenses, in which latter are included all charges for repairs, maintenance and overhauls, as compared with a surplus of $17,341,027 for 1915, an increase of $8,605,622. During 1916 and the first six months of this year transoceanic shipping, in which the company is almost entirely interested, has been surrounded by unusual and constantly changing conditions, resulting in a most complicated operating situation. Nevertheless, the profits have been abnormally large, and they must not be taken as a standard for normal times. The result of operating the International Mercantile Marine Company and its subsidiary companies, including the Frederick Leyland & Co. (American Line, Red Star Line, White Star Line, Atlantic Transport Line, Dominion Line and Leyland Line) during 1916 was as follows :—

	$
Gross earnings, after providing for British excess profits duty ...	88,119,725
Deduct : Operating and general expenses, including income-tax and interest on debenture bonds of subsidiary companies ...	55,081,353
Net earnings before providing for interest on International Mercantile Marine Company bonds and depreciation on steamships...	33,388,372
Deduct : International Mercantile Marine Company bond interest, $3,191,588; regular depreciation on steamships for 1916, $4,169,488	7,361,076
Net result (partially set aside for special and deferred depreciation)...	26,027,296

During October, 1916, the bonded indebtedness of the International Mercantile Marine Company was reduced from $70,226,000 to $39,497,000 in accordance with the plan of readjustment. In order to accomplish this it was necessary to borrow $6,000,000, which loan has since been paid off. A regular semi-annual dividend of 3 per cent. was declared on the preferred stock of the company, payable August 1, one of the dates fixed by the by-laws for the purpose. This dividend, with the dividend paid April 14, 1917, will give the preferred stockholders 6 per cent. for the current year. During the period between December 31, 1914, and December 31, 1916, the bonded indebtedness of the parent and constituent companies was reduced $33,769,319 and the interest charge was reduced $1,007,609. The only steamers directly owned by the company are the *St. Louis, St. Paul, New York, Philadelphia, Finland* and *Kroonland.* Its other principal assets, in addition to such cash as it has on hand (excluding inter-company indebtedness), are the following shareholdings in other steamship companies :—

International Navigation—70,000 £10 shares, being all the outstanding capital stock.
Société Anonyme de Navigation Belge-Americaine—2,769 5,000 fr. shares, being all the outstanding capital stock.
Atlantic Transport of West Virginia—30,000 $100 shares, being all the outstanding capital stock.
Oceanic Steam Navigation—3,750 £1,000 shares, being all the outstanding capital stock.
British & North Atlantic Steam Navigation—45,687 £10 shares out of a total outstanding issue of 45,692 shares.
Atlantic Transport—50,000 £20 shares, being all the outstanding capital stock.
Frederick Leyland & Co.—118,463 ordinary and 58,703 preference shares of £10 each out of a total outstanding issue of 120,000 ordinary and 141,435 preference.

Appended to the report is the following statement of earnings for the years ended 1916, 1915 and 1914, from the operations of the American, Red Star, White Star, Atlantic Transport and Dominion Lines, together with dividends received from the Leyland Company and other partly owned companies :

	1916.	1915.	1914.
	$	$	$
Gross earnings, after providing for British excess profits duty	60,602,009	51,056,578	43,378,526
Miscellaneous earnings...	9,514,104	4,307,588	2,242,029
	70,116,114	55,364,167	45,620,556
Operating and general expenses, including miscellaneous interest ...	40,471,441	34,217,230	38,700,413
	29,644,673	21,146,936	6,920,142
Fixed charges	3,698,023	3,805,909	3,613,113
Profit for the year, before providing for depreciation on steamships ...	25,946,650	17,341,027	3,307,028

The surplus account is as follows :—

	$	$
Surplus, December 31, 1913	1,268,997	
Profit, 1914	3,307,028	
Profit, 1915	17,341,027	
Profit, 1916	25,946,650	
		47,863,703
Deduct—		
Appropriated for depreciation on steamships 1914, 1915, 1916	23,134,500	
Miscellaneous adjustments	43,030	
		23,177,530
Surplus, December 31, 1916		24,686,172

COMPANY REGISTRATIONS.

Abbott Steamship Company, Ltd.—Capital, £10,000, in £50 shares. Objects, to acquire, insure, charter, hire, contract for building, equip, maintain and alter ships, vessels, steamers, tugs, lighters, and sea, river and lake-going craft, &c. Signatories :—

T. Stone, Hempstead, Sketty Road, Swansea, shipowner.
J. Rolfe, Tijisaf Villa, Llanelly, shipowner.

The first directors are T. H. Donking, R. A. Constantine, L. Frank, T. Stone, and J. Rolfe. Registered office, Maritime Buildings, Middlesbrough. Private company.

Mills Steamship Company.—Capital, £12,000, in £1 shares. Objects, to acquire steam trawler *King Emperor*, &c. Signatories :—

Sir James Mills, Kt., 60, Princes Gate, S.W., shipowner.
C. E. B. L. Curzon, Milford Haven, steam trawler owner.
G. A. Simmonds, 5, Fen Court, E.C., company secretary.

The first directors are Sir James Mills, Kt., C. E. B. L. Curzon and G. A. Simmonds. Sir James Mills is to be managing owner so long as he is a director, and as such is to be entitled to £250 per annum in addition to his remuneration. Directors' qualification, £1. Remuneration as fixed by the company. Registered office, 5, Fen Court, E.C. Private company.

James Pain & Sons, Ltd.—Capital, £50,000, in £1 shares. Objects, to take over the business carried on by J. C. Pain, jun., and P. Pain, at Mitcham, London, Liverpool, and elsewhere, as James Pain & Son, and to carry on the business of pyrotechnists, manufacturers of and dealers in flags, rockets, lights, flares, signals for use on ships, coloured lights and other signals or fireworks for military, naval, air service, mercantile marine and other purposes, &c. Signatories :—

J. C. Pain, jnr., London Road, Mitcham, pyrotechnist.
P. Pain, London Road, Mitcham, pyrotechnist.

Permanent governing directors, J. C. Pain, jun., and P. Pain. Registered office, London Road, Mitcham, Surrey. Private company.

John Glynn & Son, Ltd.—Capital, £20,000, in £1 shares. Objects, to take over the business of John Glynn & Son, and to carry on the business of managers of shipping property, shipping agents, ship and insurance brokers, underwriters, insurers of ships, goods and other property &c. Signatories :—

W. A. Henderson, 29, Gracechurch Street, E.C. (3), C.A.
H. S. Lewis, Crosby Buildings, Crosby Square, E.C. (3), solicitor.

The first directors are to be appointed by the subscribers. Solicitors, Downing & Co., Crosby Buildings, E.C. Private company.

Greenock Towing Company, Ltd.—Capital, £5,000, in £1 shares. Objects, to take over the business of the Greenock Towing Company, Glasgow and Greenock. Agreement with the Greenock Towing Company and Thomas Wright, writer for this company. Signatories :—

Wm. Bow, Thistle Works, Paisley, shipbuilder and engineer.
John M'Lachlan, Thistle Works, Paisley, shipbuilder and engineer.

The first directors are :—William Bow and John M'Lachlan. Registered office, 1, Robertson Street, Glasgow. Private company.

Provincial Metal Co., Ltd.—Capital, £3,000, in £1 shares. Objects, manufacturers, casters, founders, refiners, importers, and exporters of and dealers in aluminium, bronze, copper, gun metal, lead, nickel, phosphor bronze, spelter, tin, &c. Signatories :—

E. Dean, 117, Arden Road, Handsworth, Birmingham, clerk.
H. G. Willmot, 14, New Street, Birmingham, C.A.

The first directors are to be appointed by the subscribers. Registered office, 14, New Street, Birmingham. Private company.

Birmingham Steamship Company, Ltd.—Capital, £100, in £1 shares. Objects, shipowners, charterers and builders, shipbrokers, &c. Signatories :—

O. G. Eveson, 134, Edmund Street, Birmingham, coal merchant.
E. Blackburn, 134, Edmund Street, Birmingham, coal merchant.

The first directors are :—O. G. Eveson and E. Blackburn. Registered office, 134, Edmund Street, Birmingham. Private Company.

Overseas Steam Fishing Company, Ltd.—Capital, £15,000, in £1 shares. Objects, fishing-vessel owners, fishers, fish salesmen and merchants, &c. Signatories :—

W. H. Beeley, National Provincial Bank Chambers, Fish Dock Road, Grimsby, steam fishing-vessel owner.
J. W. Ashley, Sunfields, Healing, near Grimsby, steam fishing-vessel owner.

Managing director (also permanent secretary and fish salesman), W. H. Beeley. Private company.

NEWS PARAGRAPHS.

Dutch Sea Fisheries.—A deputation of the Dutch Shipowners' Association is coming to London in order to discuss with the British Government questions affecting the Dutch Sea Fisheries.

Lives Lost on British Merchant Ships.—The number of lives reported as lost on British merchant vessels, owing to enemy action, from the beginning of the war until June 30 last, amounts to 9,748.

Norske Ocean Assurancesellskab.—This company has been founded in Christiania with a share capital of £110,000 to undertake marine insurance. Several large owners are interested in the concern.

Italian Shipping Line to Brazil.—An Exchange message from Rome states that the Minister of Transports announces that an important new steam navigation line will be shortly established between Brazil, Genoa and Naples.

Austria Building Ships.—The *Agenzia Nationale* (Rome) states that the Austrian yards are busy building merchant ships, chiefly cargo boats averaging 8,000 tons, with a speed of 11 knots. The Adria Company has 15 under construction.

American Shipping.—The New York correspondent of the *Daily Telegraph* reports that an additional £100,000,000 will be asked from Congress by the Shipping Board, as the same amount voted in June has all been absorbed. The extra £50,000,000 appropriated at that time will be used in commandeering ships.

New Dutch Owners.—The Scheepsexploitatie Mij. Bestevaer, Ymuiden (with a share capital of £41,666), and the Scheepsexploitatie Mij. Navis, Sliedrecht (with a share capital of £83,333), have been established to engage in general cargo traffic. Both companies have bought vessels now under construction.

Scandinavian Shipping Losses.—The Danish paper *Aftenblad* states that since the beginning of the war 933 Scandinavian ships have been lost by torpedoes and mines. Norway has lost 600 ships, Denmark 187, and Sweden 146.; and about 500 Scandinavian sailors have been killed by German submarine activity.

Losses of Swedish Shipping.—It is reported that the Swedish mercantile marine, during three years of war, has lost 99 steamships and 47 sailing vessels, amounting to 138,493 tons, or 12 per cent. of its total tonnage. Fifty-two steamers and 31 sailing ships were sunk by submarines and 32 steamers and three sailing vessels by mines.

The Swedish "Transatlantic" Company.—This company has further increased its fleet by two steamships and 3,200 gross tons, thanks to the acquisition by its daughter company, Viking, of a majority of shares in the Stockholm Reederei Rex. The Transatlantic company has also chartered two steamships from a Helsingborg owner for five years.

Equipment of Vessels with Lifejackets.—The Marine Department of the Board of Trade has issued a circular containing instructions to ships' surveyors respecting the provision of lifejackets as part of the statutory equipment of vessels. The circular deals with the inspection of lifejackets as regards tapes, sewing, marking, covers, buoyancy, &c., and contains a list of approved and standard lifejackets. An appendix to the circular gives the specifications of kapok and cork service and standard lifejackets.

Canadian Shipbuilding.—The Agent-General for Quebec states that the growth of Canadian shipbuilding is shown by the fact that, while 43,345 tons were turned out in 1914, it is expected that the returns for 1917 will show a threefold increase. The Canadian Register of Shipping for the past year records 942,598 tons, and shipyards are now busier than they have ever been since the days of the wooden clippers, and it is safe to say that, as a result of the war, steel shipbuilding will become a great industry.

New Italian Shipping Company.—The Rome *Times* correspondent states that a new steamship company—the Transoceanica—has been formed at Naples with a capital of £4,000,000. The chairman is Mr. Pierce, a British subject. The firm of Pierce Brothers, managers of the Sicula Americana line of passenger and cargo steamers to the United States, is largely interested in Italian shipping. Surprise, however, is likely to be general at so large a capital as £4,000,000. A number of liners have been built in this country for the Sicula Americana, and other ships may lately have been bought, but the capital named is a formidable one for any new shipping company under present conditions.

New Danish Yard.—A company has been founded in Korsor with a share capital of £16,600, to undertake the present construction of wooden vessels and, later, the construction of steel vessels. The company has bought the Assens shipbuilding concern which will be removed to a site on the new harbour. Two repair slips and three building ways will be established.

Austrian Ships in U.S.—The New York correspondent of *The Times* states that eight of 16 Austrian vessels interned in the United States have been purchased by the Kerr Navigation Corporation, New York, on an understanding with the Shipping Board that they will not be requisitioned as long as they are kept in the North Atlantic Allied trade. The average capacity of the vessels is 6,500 tons deadweight. They will be used in French and Italian trade. The purchase is allowed because the United States is theoretically not yet at war with Austria. It was announced in May that the Federal Shipping Board had purchased from their American owners seven of the former Austrian steamers which were lying in American ports.

Depreciation on Motor Ships.—In connection with Government returns for taxation purposes, the East Asiatic Company declares that it allows 6⅔ per cent. depreciation on the book value of its 16 motor ships, compared with the usual allowance of 4 per cent. on steamships. The higher allowance is due partly to the vessels coming under the heading of passenger vessels and being therefore liable to higher charges than simple cargo vessels in respect of maintenance, &c. The Diesel motors will propably depreciate more rapidly than lower speed steam engines, and besides, some allowance must be made for obsolescence as distinct from physical deterioration. Attendance and maintenance charges are higher for Diesel-drive than in ordinary marine engines, and it is not considered advisable to reckon on a longer life than 15 years for Diesel ships.

Civil Chronology in Navigation.—The Seeschifferverein Weser, Bremerhaven, express the opinion, concerning the introduction of civil instead of astronomical chronology, that most navigators use the latter only in calculating star and moon observations, and would use civil chronology if only the Nautical Year Book and tables were arranged accordingly. The Verein cannot see, however, that any great progress could be made until foreign (and particularly English) year books were arranged on the same basis. Until then, astronomical time would still have to be taught in navigation schools. Subject to this condition, the Verein thinks it would be advantageous to base the astronomical section of the Nautical Year Book on civil chronology (preferably with continuous reckoning of hours from 1 to 24), in the same way as tide tables and a part of the year book are already arranged.

Swedish Commerce & Shipping Company, Stockholm.—This company commenced operation in July with an authorised capital of £194,000 minimum and £580,000 maximum (£550,000 being subscribed). The company is supported by several well-known owners and wholesalers and proposes to do business as shipowners and to import and export goods and materials principally on its own vessels. Several large cargo vessels (totalling about 12,000 tons) have already been received. Special importance is attached to the import of raw materials for Swedish industries and to the export of Swedish manufactures. Several concerns of this combined commercial and shipping nation have now been formed in Scandinavia and Holland; indeed, there is no doubt that the trend of development all over the world is towards closer association of commercial, industrial and shipping interests.

Norddeutsche Lloyd Year Book.—Generaldirektor Heineken has a good deal to say in the latest year-book of the Norddeutsche Lloyd concerning the future of German merchant shipping. It is not yet possible to give definite figures showing what the war has meant to the Lloyd, but the latter has reason to be thankful that profits from good years preceding the war were applied largely to strengthening the position of the company. Future developments depend primarily on the outcome of the war and on the exact conditions of peace. Shipowners will naturally be greatly affected by the scope of war indemnity measures. Heineken "does not believe in the seven fat years which, it is prophesied, will come automatically to shipowners on the conclusion of peace." His opinion is that the dearth of tonnage caused by U-boats will certainly lead to a period of high freights after the war, but that within two or three years conditions will be nearly normal again. Limitation of imports and control of raw materials in various countries will not be without effect on the demand for tonnage and the level of freights.

French Red Cross Fund.—A donation of £250 to this fund has been given by Cornwall Lloyd & Co., Ltd.

King George's Fund for Sailors.—The total contributions to this fund from members and subscribers of Lloyd's now amount to the sum of £15,994.

New French Minister of Marine.—According to a Reuter message from Paris, M. Charles Chaumet has been appointed Minister of Marine. The Cabinet has also decided to create an Under-Secretaryship of State for the Navy, and M. Jacques Louis Dumesnil has been appointed to this post.

Requisitioning Vessels in U.S.—A report from Washington states that the U.S. Government has commenced the requisitioning of merchant ships, and has commandeered the privately-owned passenger and cargo vessels which have been transferred to the War Department for the transportation of supplies and materials to France.

Vessels Owned by Shipping Controller.—Notice was given in the *London Gazette* of August 14 that after the expiration of 40 days it is proposed to submit to His Majesty in Council the draft of an Order in Council to enable vessels owned by the Shipping Controller to be registered as British ships under the Merchant Shipping Acts.

China takes Hun Ships.—A Reuter message from Shanghai states that the Chinese Naval authorities have taken over three Austrian merchantmen which were lying interned in the harbour. There were no disturbances, and the vessels are undamaged. The German and Austrian ships which have been taken over until now amounts to a total of 18,000 tons.

"Conway" Cadets.—Four of the candidates put forward from the Cadet ship *Conway* have successfully passed the examination for entry into Dartmouth. The successful students are Cadet P. C. P. Thomas, son of Col. A. W. Thomas, Swaffham, Norfolk; Cadet J. K. B. Stephenson, Bank House, Cambridge Crescent, Harrogate; Cadet H. W. Head, St. George's Lodge, Winchester; and Cadet C. J. Wynne-Edwards, Clarendon Road, Leeds.

"Windjammers" in Demand.—The demand for shipping in the United States is so acute that many vessels of ancient rig are being overhauled in the New England ports and converted into ocean carriers. The whaling bark *Andrew Hicks*, of New Bedford, which was built at Fairhaven in 1867, has just been sold to foreign account, and will be placed in the overseas trade, carrying cargoes that in ordinary times would be handled by steamers.

New Shipbuilding Yard at Yokohama.—Mr. Uchida Nobuya, of Kobe, the head of the new shipping millionaires, recently bought up the Yokohama Engine Works, and has reorganised it as a joint-stock concern. It is stated that Mr. Nobuya has decided to buy 27,195 isubo of reclaimed land at Senwakacho for the purpose of establishing a shipbuilding yard. The Mayor of Yokohama has heartily welcomed the project, and promised to give it every assistance in his power.

War Risk Insurance on Shipping.—It was announced at the Cardiff Coal Exchange on August 13 that a new arrangement of the war risk shipping insurance scheme would come into operation on August 19. Under the new arrangement the Government, instead of reissuing only 80 per cent. of the Government valuation of hulls and machinery, will reinsure the whole value, and thereby relieve owners from liability for calls. It is probable that rates of premium for steamers not on requisition will be increased.

Allies' Shipping Losses.—According to a semi-official statement from Paris (through Reuter's Agency), the German Government, on various occasions, has published figures of the tonnage losses which, it alleges, its submarines have inflicted on the Allied merchant fleets since February 1 of this year. At their meeting in Paris, on July 25, the Admirals of the Allied States examined the figures issued by the German Government and found that they were on an average at least 40 per cent. above the actual losses suffered by the Allied merchant fleets.

Barges for Wheat Cargoes.—In order to assist the tonnage problem, which does not grow easier, and to deal with the large amount of wheat awaiting shipment at Australian ports, it has been suggested that lighters and small coastal vessels should be converted into barges, which could be towed to South Africa, where their cargoes would be discharged into steamers and despatched to the United Kingdom. This method was adopted at one time, with successful results, for the transport of goods along the eastern seaboard of the United States.

Koninklijke Nederlandsche Stoomboot Mij.—This company is planning to establish a shipping service between Holland and West Africa.

Dutch Shipping.—During the period 1913-16, the number of vessels entering Rotterdam decreased from 8,693 to 3,102, and the tonnage from 11·5 million to 3·2 million tons. This decrease in traffic has, of course, been accompanied by a corresponding decrease in harbour service revenues and in warehouse and Rhine shipping business. Amsterdam has hitherto suffered to a less extent, passenger and cargo traffic with the East Indies being of primary importance to this port. Amsterdam and Rotterdam together had 4,724 arrivals (4·7 million tons, net register) in 1913, compared with 10,766 vessels and 13·8 million tons in 1913. It is feared that the figures for this year will show a further serious reduction.

Wooden Ships in Denmark.—The building of wooden vessels is now under way in Denmark, and, although the start is small the experiment will be pushed. The decision in this matter has been hastened by the submarine warfare of Germany. At many ports in Denmark temporary arrangements have been made for the laying down of wooden ships. Many industries are threatened with stoppage due to the lack of raw materials, and the workers can thus be given employment at the shipyards building these new vessels. The type being constructed is a standard one, being of three to four masts, and having a loading capacity of 500 to 600 tons. These boats will also be provided with a motor. There are ten of this class of vessel now being built.

Dutch Shipping Profits.—An American Consular report shows the dividend increases of important Amsterdam steamship companies since the war began. Comparing 1916 with 1913, one company's dividend has risen from 8 to 20 per cent., a second from 8 to 18 per cent., a third from 20 to 50 per cent., and a fourth from 12½ to 60 per cent. The Dutch companies paid heavy war-profits taxes in 1916, covering the period from August 1, 1914, and most of them added large sums to their reserves. No war-profits tax was paid until 1916, which materially reduced the amount available for dividends. Holland's steamship companies have increased from 20 to 24 since 1913, the number of steamships from 367 to 480, and the gross tonnage from 1,239,040 to 1,611,320.

Harbour Regulations and Tariffs (South Africa).—The *Union of South Africa Government Gazette* recently published a Government Notice, embodying revised Regulations, made under the Railways and Harbour Regulation, Control, and Management Act (No. 22 of 1916), for the harbours of the Union of South Africa. These Regulations, which took effect from July 1, 1917, deal with (*inter alia*) the reporting, movements, working, &c., of ships, dry docks and slips, wrecks, tugs, hulks, fishing boats and small craft, ferries, pilotage and pilots, leanding, shipping, and transhipping of cargoes. Another Government Notice extends, with certain modifications, as from July 1, 1917, to all the other harbours of the Union, the tariff of dues and charges at the principal Union harbours.

Langstone Harbour.—The total estimated cost of the proposed Langstone Harbour, according to a statement recently made by the Mayor of Portsmouth, is about £1,500,000, but if to that be added increased cost of labour and machinery, and the difficulties and cost in getting an Act of Parliament through, the cost would not be less than about £2,000,000. That would mean about £2,000 per week in interest. Would they find enough ships coming into the harbour to provide that £2,000 per week? Other charges, he said, would follow in looking after the port, keeping the docks and wharves in order, &c. They would want two ocean-going steamers in every day. If they could rely upon 10 or 12 5,000 or 6,000-ton boats coming in every week, Langstone Harbour's prosperity would be absolutely assured.

Railway Warrants for Workmen.—The Engineering and Shipbuilding Trades Central Advisory Committee (Operatives), which has recently been appointed by the Minister of Labour to advise and assist the Employment Department on questions affecting workpeople in those industries, held its second meeting on August 9, and expressed satisfaction with the arrangements for the issue of railway warrants at reduced rates to workmen placed in work of national importance through the employment exchanges. The committee recommended that the limit of distance from an office of the Employment Fund within which workmen must sign the vacant book daily should be reduced from three to two miles. They also discussed, among other matters, the question of co-operation with the employment exchanges with regard to the transfer of shipyard labour.

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"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and Type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Benjamin, ss. (single dk.) (ex *Carioca*, ex *Maria D.*)	1,117 gr. 637 net 1,550-d.w.	240′ × 40′ × 13½′ (14′)	Mr. L. M. Rojas, Buenos Ayres, to French buyers	Soc. Anon. John Cockerill, Hoboken (1902)	13, 19½, 31½ × 23½ (Soc. Anon. J. Cockerill, Seraing)	Price about £85,000.
City of Brussels, ss. (iron, single dk.) (ex *Theresina*)	1,027 gr. 625 net	239½′ × 30¾′ × 16′ (17′)	Palgrave, Murphy & Co., Dublin, to buyers not stated	R. Dixon & Co., Middlesbro' (1876)	18, 30, 48 × 30 (D. Rolls & Sons, Liverpool)	Price about £67,000 for the three.
City of Cologne, ss. (iron, single dk.) (ex *White Sea*)	994 gr. 588 net	230½′ × 30¾′ × 15¾ (16′ 2″)	Palgrave, Murphy & Co., Dublin, to buyers not stated	A. Stephen & Sons, Dundee (1881)	27, 54 × 36 (Pearce Bros., Dundee)	
City of Liverpool, ss. (iron, single dk.) (ex *Dromore*, ex *Dawn*)	1,101 gr. 658 net	246½′ × 30′ × 16½′	Palgrave, Murphy & Co., Dublin, to buyers not stated	Humphreys & Pearson, Hull (1872)	27, 52 × 33 (Humphreys & Pearson, Hull)	
Chincha, ss. (shelter dk.)	6,395 gr. 4,064 net	403′ × 52½′ × 26¾′ (28′ 8″)	W. R. Grace & Co., New York, to Italian buyers	J. L. Thompson & Sons, Sunderland (1912)	24, 34½, 49, 71 × 48 (N.E. Mar. Eng. Co., Newcastle)	Price about £600,000.
Danefærd, ss. (iron, well dk.) (ex *Amalienborg*)	1,344 gr. 837 net	248½′ × 33′ × 15½′	Dampsk. Selsk. Oceana Akties., Copenhagen, to Sir Edward Hain, St. Ives	Burmeister & Wain, Copenhagen (1884)	30, 52 × 33 (Burmeister & Wain)	—
George Fisher, ss. (iron, single dk.)	1,231 gr. 779 net 1,800 d.w.	236½′ × 31½′ × 18¼′ (17′ 9″)	Capper, Alexander & Co., London, to buyers not stated	Richardson, Duck & Co., Stockton (1877)	28, 53 × 33 (T. Richardson & Sons, Hartlepool)	—
Hollandia, ss. (single dk.) (ex *Henner*, ex *Carl Menzell*) (renamed **Gustav Salling**)	1,597 gr. 965 net	245½′ × 35½′ × 15¼′	L. Jahn & C. Wiese, Memel, to Rhederei G. Salling, Flensburg	Flensburger Schiffsb. Ges., Flensburg (1903)	15, 23⅞, 43,⅝ × 34,⅞ (Flensburger Schiffbau Ges.)	—
Macaria, ss. (ex *Shingo Maru*, ex *Pyrrhus*)	3,627 gr. 2,286 net	354½′ × 42¾′ × 26¼′	Mr. V. Madrigal, Manila, to Cia. Gen. de Tabacos de Filipinas, Manila	Scott & Co., Greenock (1892)	23, 38, 62 × 54 (Scott & Co., Greenock)	Price about £210,000.
Monaleen, ss. (single dk.) (ex *Allerton*)	616 gr. 257 net 820 d.w.	174½′ × 28′ × 10½′ (13′)	J. N. Russell & Sons, Limerick, to buyers not stated	J. Fullerton & Co., Paisley (1914)	14, 24, 40 × 27 (Ross & Duncan, Glasgow)	Price about £44,000. Sold in May, 1916, for about £31,000.
Nikolaos, ss. (single dk.) (ex *Dionyssios Stathatos*, ex *Japanie*)	3,561 gr. 2,296 net 6,100 d.w.	346½′ × 50¾′ × 23′ (21′ 5″)	Mr. N. E. Ambatielos, Argostoli, to French buyers	J. L. Thompson & Sons, Ltd., Sunderland (1906)	24½, 40, 66 × 45 (J. Dickinson & Sons, Ltd., Sunderland)	Price about £350,000.
Portimao, ss. (spar dk.)	1,489 gr. 923 net	245¾′ × 35¼′ × 18½′	Oldenburg - Portugiesische Dampfs. Rhederei, to J. M. K. Blumenthal, Altona	Akt. Ges. Schiffswerft von Henry Koch, Lubeck (1899)	16½, 28, 44½ × 32½ (J. F. Ahrens, Ottensen)	—
Ramsholm, ss. (well dk.) (ex *Ramfos*, ex *Phoniz*, ex *Joseph John*)	2,172 gr. 1,350 net	280′ × 38¼′ × 18¼′	Mr. S. Mohn, Bergen, to Mr. O. Sörensen, Arendal	W. Doxford & Sons, Sunderland (1889)	21, 35, 57 × 39 (W. Doxford & Sons)	—
Veenbergen, ss. (ex *Eresham*, ex *Albiana*)	4,281 gr. 2,758 net 7,386 d.w.	360½′ × 47¾′ × 28′ (24′ 9″)	N.V. Furness Scheepen Argentuur-Maats., Rotterdam, to Furness, Withy & Co., Liverpool	Northumberland S.B. Co., Ltd., Newcastle (1905)	25, 41, 69 × 48 (Westgarth & Co., Ltd., Sunderland)	—

SHIPPING SHARE MARKET.

Whilst the amount of business transacted in the shipping stock and share market is still upon a low level, prices are quite good, and in some instances exhibit very satisfactory advances. Peninsular & Oriental deferred has, for example, improved from 312 (its lowest middle quotation of last week) to 320 middle. Royal Mails are also a firm market at 112–115. Among lower-priced shares Court Lines have recovered the amount of the dividend at 30s., and Furness Withy issues have been supported on the publication of the reports of the Cargo Fleet and the South Durham Steel Companies, in both of which concerns the Furness Withy shareholders are largely interested. The main feature of interest in the shipping market has, however, been the continued advance in the price of the ordinary and preference shares of the Argentine Navigation Co. The shares are now 19s. and 1 3/16 respectively for the ordinary and preference as compared with 14s. and 20s. when we drew attention to the buying. In the last financial year (1915-1916) a debit balance was turned into a credit, and owing to the sale of several of the company's vessels during the past financial year the company has been able to redeem a large block of the debentures and the financial position has been considerably strengthened. The company is also understood to have benefited through its holding in an associated company which operates mainly on the seaboard north of Brazil. This company paid 40 per cent. last year, and has sold some of its vessels at very high prices. The company's report is not due for another two months, and investors should not be led into paying an excessive price for the ordinary shares, although if the full preference arrears (15 per cent.) are paid the preference shares appear to be still undervalued at 23s. In the other sections of the market, such as engineering and iron and steel companies, there has been a fair amount of business. There has been a big rise in Marine Insurance Co.'s shares on the announcement that the company has been taken over by the London & Lancashire. For some time past there has been a brisk demand for shares of all companies transacting marine business.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING.

Name.	Share and paid.	Extreme quotations, 1916.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
African S.S.	20	33—23½	10	6¾	29	
Allan Line ... ... Deb.	100	—	4	4⅜	92	
Anchor Line ... Cum. pref.	10	9⅞—9¼	5½	5¾	9½	
Do. ... ... Deb.	Stk.	105⅝—102⅜	4⅜	4⅜	102	
Argentine Nav. ... Cum. pref.	1	19/6—11/-	Nil.	Nil.	18/9	+4/3
Do. ... ... Deb.	Bds.	93⅜—84	6	6	99	
Australasian Un. S. Nav. Deb.	Stk.	83⅜—80⅛	4	5⅛	78	
Belfast Steam ... ... "A"	10 (5pd.)	—	5	5	5	
British & African Nav. Deb.	Stk.	96½—91	4½	4⅝	102	
British India Nav. ... Deb.	Stk.	94¼—88½	4½	5⅛	83	
British S.S. Invest. Trust Def.	Stk.	357—190	30*	8⅝	355	
Do. ... ... Pref.	Stk.	108—105½	6	6	101	
Do. ... ... Deb.	Stk.	79—77½	4⅜	6⅛	74	
Cairn Line ... ... Deb.	Bds.	99—88	5	5⅝	90⅜–91	
Do. ... ... Ord.	1	—	20†	9⅜	42 6	
Clan Line ... ... Ord.	10	32½—22¼	25	9⅜	29/3/6	−1 3/16
Court Line ... ... Ord.	£1	42/—26/-	20	12	31/3	+1/3
Cunard SS. ... ... Ord.	1	101/—68/-	20*	5	76/9	—-/9
Do. ... Cum. pref.	Stk.	95—89	5	5⅝	85¼	
Do. ... ... Deb.	Stk.	99⅛—93¾	4⅜	4⅝	98	
Elder Line ... ... Deb.	Stk.	97¼—89⅛	4⅜	4⅜	103	
Elder Dempster ... Cum. pref.	1	20/6—18/1⅛	5⅜	5½	19/-	
Do. ... ... Deb.	Stk.	92⅜—88⅜	5	5½	86	+1
Ellerman Lines ... Pref. Ord.	10	9 1/16—9⅛	6⅜	6½	8 13/32	
Do. ... Guar. pref.	10	9 1/16—8⅜	4⅜	5¼	8⅜	
France Fenwick ... Cum. pref.	5	98/5—92/6	5⅜	6¼	91/3	+1/3
Furness, Withy ... Ord.	1	61/3—34/3	20*	9⅜	45/9	−2/6
Do. ... Cum. pref.	10	9⅛—7⅝	5	6½	8 13/32	
General Steam Nav. Ord.	7½	12⅜—8½	15	7⅜	23/-	
Do. ... ... Pref.	8	7 1/16—6⅜	6	7⅜	16/-	
Houlder Line ... Cum. pref.	5	83/9—67/6	5⅜	7½	81/10½	
Do. ... ... Deb.	Stk.	—	4⅜	4¾	93	
Houlder Bros. ... Cum. pref.	5	—	5⅜	5⅜	4	
Do. ... ... Deb.	Stk.	—	4⅜	5⅜	82	
India Gen. Nav. & Rly. ... Ord.	10	12—8⅜	6	5¾	10⅜	
Indo-China N. ... Pref. Ord.	5	5 7/16—90/-	6	6¾	90/-	
Irrawaddy Flotilla	40	—	15	5 3/16	116	
Khedivial Mail ... ... Ord.	1	37/—10/-	25	13¾	36/-	
Do. ... ... Pref.	5	77/6—60/6	5⅜	7⅜	72/6	
Do. ... ... Deb.	Stk.	94¾—87½	4⅜	4⅜	95	
King Line ... ... Ord.	1	—	16*	9⅜	37	
Lamport & Holt ... Cum. pref.	£1	20/9 –18/9	6	6	19/9	—-/3
Leyland (F.) ... Cum. pref.	10	8⅛—6 1/16	5	6⅜	7¼	
Mercantile SS. ... ... Ord.	5	18⅜—12	40	13	14¾	— ½
Do. ... ... Pref.	1	20/1⅜—20/-	5	6½	16/3	
Moor Line ... ... Ord.	10	—	30	13	24½	
Nelson Steam Nav. ... Deb.	100	98¾—97⅛	5	5⅛	98¾	
New Zealand ... ... Ord.	£10	—	8	2½	32⅛	
Do. ... ... Deb.	Stk.	90¾—88	4	4½	86	
Nitrate Producers SS. ... Ord.	5	25¾ –18	30	6¼	24⅜	
Do. ... Cum. pref.	5	—	5	5	5	
Oceanic Steam. Nav. ... Deb.	100	99—95⅛	4⅛	4⅜	96⅞	
Orient.Stm.Nav.Co. Cum. pref.	10	9¾—9 1/16	5	5⅜	9 1/16	+ 1/16
Do. ... ... Deb.	100	98—91⅜	4½	5⅛	89 1/16	+ 1/2
P. & O. S. N. ... Cum. pref.	100	100—91	5	5⅛	89¾	
Do. ... ... Def.	100	349—270	18	5⅜	325	— 1
Do. ... ... Deb.	Stk.	71—69	3½	5⅜	65½	
Prince Line	1	95/—-26/-	30	8⅛	87/6	+1/3
R.M.S.P. ... ... Ord.	100	134½—97½	7	6⅛	114	
Do. ... ... Pref.	Stk.	86¾—76½	5	6⅛	81	
Do. ... ... Deb.	Stk.	89—86	4⅛	5⅛	85	
Shaw, Savill & Alb. Cum. pref.	5	95/- –83/3	5	5¾	87/6	
Shell Transport ... ... Ord.	1	6 –4⅜	35	5⅛	5 1/16	
Do. ... Cum. pref.	10	10⅛ –9	5	5⅜	9¼	
Sutherland SS. Co.	£1	69/6 –41/6	30	10	53/-	
Union-Castle SS. ... Cum. pref.	10	7 1/16—7	4⅜	5	7⅜	
Do. ... ... Deb.	Stk.	32⅝—86⅜	4	4⅜	86½	
West Hartlepool ... ... Pref.	10	8¼ –7⅜	5½	7⅛	7⅜	

INSURANCE.

Alliance	20 (2·4 pd.)	10½—8⅜	12/-	6⅜	11 9/16	−1 9/16
Indem. Mutual Marine	15 (3 pd.)	13⅜—9⅜	15/-	5	20½	
London Assurance	25 (12½ pd.)	52⅜—42½	20	6	55¼	
Marine Insurance	25 (15 pd.)	36⅜—33⅜	45/-	6	56½	+1
Merchants' Marine Insurance ...	10 (2½ pd.)	7 1/16—71/3	10	6	9¼	
N. British & Mercantile Ord.	25 (6¼ pd.)	34⅜—29	40/-	6⅜	35	
Phœnix Assurance	10 (1 pd.)	7¼—5⅞	40	7	7 7/16	+ 5/16
Reliance Marine	10 (2 pd.)	—	20	4½	7⅜	
Royal Exchange Assurance ...	Stk.	189½—181	10	5½	217	+ ¾
Sea Insurance	10 (2 pd)	19½—19 1/16	10	5⅛	29 9/16	
World Marine, Limited ...	5 (2 pd.)	61/3 –35/-	5	5	5¼	

IRON AND STEEL.

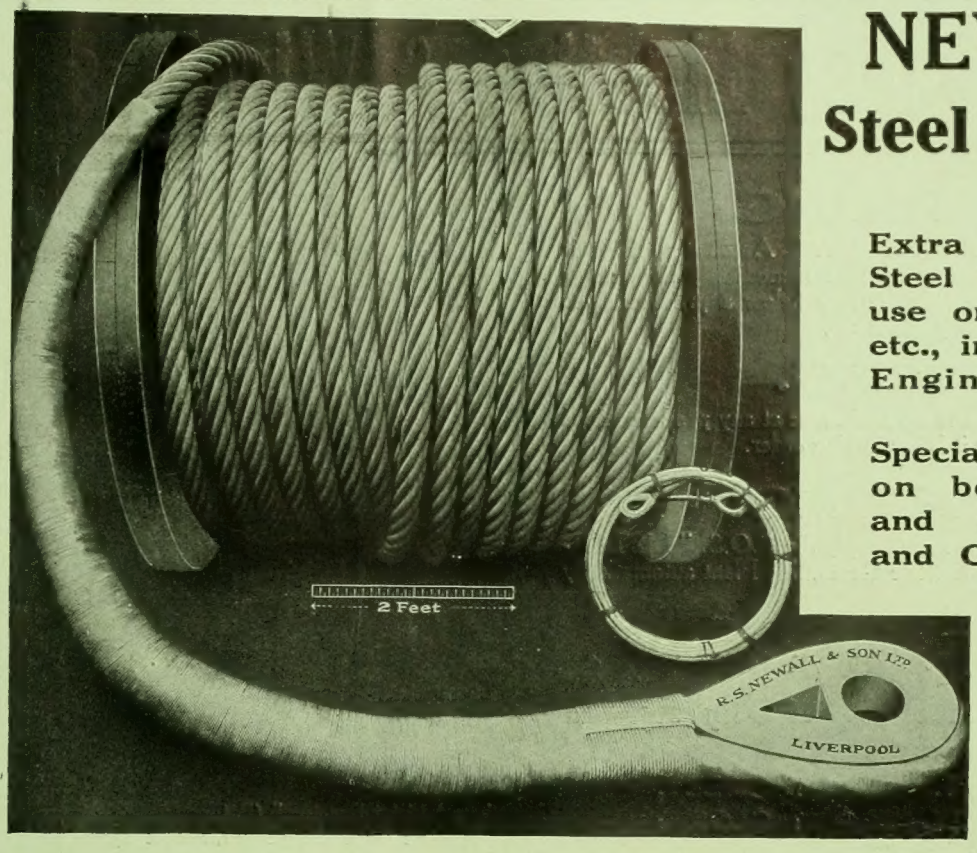
Name.	Share and paid.	Extreme quotations, 1916.	Last ann. div. % or per share	Yield. %	Last Quotation	Rise or Fall.
	£					
Babcock & Wilcox... ... Ord.	1	64/6-47/10⅛	15	5	62/–	+ -/3
Baldwins ... Cum. pref.	1	1⅛—1	5⅛	5⅛	40/1⅛	--2/10½
Do. ... ... Deb.	Stk.	87⅛—86¼	4⅛	5⅓	84	
Bayliss, Jones ... Cum. pref.	1	—	5	7¼	1 1/16	
Bell Bros. ... ... Cum. pref.	10	10⅜—9 3/16	8	6	10	
Do. ... ... Deb.	Stk.	80—78⅝	5	6⅜	75⅛	
Bessemer (Henry) ... Ord.	1	29/—26/-	12⅛	12	25/3	
Bolckow Vaughan ... Ord.	1	25/10⅜–18/-	11	9⅛	27/-	
Do. ... ... Cum. pref.	20	19—18	5	5⅛	16⅜	
Cargo Fleet Iron ... ... Ord.	1	23/3-13/10⅜	3	3⅛	21/9	— -/3
Do. ... ... Deb.	100	86¾—84	4⅜	5⅜	82	
Consett Iron Co. ... ... Ord.	1	89/4⅜–65/3	50	11	92/6	
Dominion Iron & Steel	Bds.	83—78	5	6⅜	79¾	+ ¼
Dorman, Long ... ... Ord.	1	36/—-22/3	14	9	40/-	+1/3
Do. ... ... Deb.	Stk.	97⅜—97	4	5½	73	
Ebbw Vale Steel & Iron Ord.	1	28/7⅜—19/-	12⅜	9¼	26/3	— -/3
Guest, Keen & Nettefids Ord.	1	71/3 - 60/-	15*	3⅜	76/3	–7/6
Do. ... ... Cum. pref.	5	5¼—5⅛	5	4¼	5⅜	
Do. ... ... Deb.	Stk.	82¾—80¼	4	5¼	75¼	+ ¼
Hadfield's Steel Foundry Ord.	1	82/8 - 69/-	30	7⅜	83/9	
Ibbotson Bros.	5 (4 pd.)	8—6	7⅛	4¾	6¾	
Jessop (W.) & Sons ... Ord.	5 (4 pd.)	9—8	15*	7¼	8⅛	
Lanarkshire Steel Cum. pref.	10	—	5	7⅛	7	
Lysaght (J.) ... Cum. pref.	1	22/7½—20/3	6	6	20/–	
Do. ... ... 2nd pref.	1	21/1½—21/-	6	6	20/-	
Manganese Bronze ... Ord.	1	—	6	11	11 1/16	
Do. ... ... Cum. pref.	1	—	6	8	3/4	
North-Eastern Steel ... Deb.	Stk.	—	4⅛	—	—	
Palmers Ship & Iron "A"	1	12/6—9/-	Nil.	Nil.	9/9	
Scott (Walter) ... ... Ord.	1	26/3—17/9	15	12⅛	24/–	
Do. ... ... Pref.	1	16/10⅜–16/3	6	7⅜	16/3	
Sheffield Forge ... ... Ord.	1	—	15	6⅜	53/6	
Shelton Iron & Steel ... Ord.	1	20/4¼—15/-	7½	8⅛	20/–	- -/10⅛
Do ... ... Deb.	100	94—92⅜	5	5¼	91⅜	
S. Durham Steel & Iron Ord.	1	37/6—27/-	10	6⅜	36/1⅛	+2/4½
Do. ... ... Cum. pref.	1	21/—12/-	6	6⅜	20/–	
Do. ... ... Deb.	Stk.	82—80	4⅜	5⅜	80	
Steel Co. of Scotland ... Ord.	10	—	10	10	12/1/–	
Stewarts & Lloyds Pref. ord.	10	18⅜ –17	10	5¼	15⅜	
Do. ... ... Cum. pref.	10	—	6	4⅜	13 1/16	
Stone (J.) ... ... Cum. pref.	10	—	5	6¼	8	
United States Steel ... Ord.	100$	114⅛ –83¼	8	6¼	116½	
Do. ... ... Cum. pref.	100$	128½—112¾	7	5⅜	125	
Vickers Ltd. ... ... Ord.	1	40/3 –33/6	12½	7¼	39/1⅜	
Do. ... ... Pref.	Stk.	93 –85	5	6	84	
Do. ... ... Deb.	Stk.	83 75	4	5 1/16	77⅜	
Weardale Steel ... Def. ord.	1	31/- 19/1⅜	19½	13⅜	29/3	
Do. ... ... Cum. pref.	1	3 6 –17/6	6	6	23/6	
Do. ... ... Deb.	Stk.	70½ –69½	4	6	65½	
Workington Iron & Steel Ord.	1	21/3—14/3	10	7⅜	26/–	—1/3

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	43/—-34/6	12½	7	39/-	— -/6
Do. ... ... Cum. pref.	5	75/—-67/6	4	5⅞	70/4½	
Do. ... ... Deb.	Stk.	80¼—75	5	6⅜	75/–	
Beardmore (W.) ... ... Deb.	100	99—92	4⅜	5	91/–	
Brown (John) ... ... Ord.	1 (15s. pd.)	27/3 -20/6	12½	8⅛	26/3	+ -/9
Do. ... ... Cum. pref.	10	10—5⅜	5	5⅞	8⅛	
Cammell Laird ... ... Ord.	5	7 –98/-	10	8	6 13/16	
Do. ... ... Cum. pref.	5	88/—-76/3	5	6¾	80/–	
Do. ... ... Deb.	100	93½—85	4⅛	5⅛	81	
Dunlop (Jas.) ... ... Ord.	1	19/7⅛-13/4½	10	10½	18/6	
Do. ... ... Cum. pref.	1	17/1⅛-16/4½	6	7⅛	17/6	
Fairfield Shipbldg Cum. pref.	10	8⅛—8 1/16	6	7⅛	8⅛xd	
Fleming & Ferguson ... Ord.	10	—	10	7	14⅜	
Gray (Wm.) ... ... Deb.	100	100½—93¾	4⅜	4⅜	100¼	
Hawthorn (R. & W.) Leslie Ord.	10	15⅜—14	12½	8	15¾	
Henderson (D. & W.) Cum. pref.	1	—	5	8⅜	9/16	
Richardsons Westgarth Ord.	1	7/9—2/10⅛	Nil.	Nil.	6/8½	
Do. ... ... Cum. pref	1	15/7⅜—8/-	Nil.	Nil.	13/10⅜	+ -/4⅛
Do. ... ... Deb.	Stk.	69—67½	4⅜	6¼	63	+ 1
Simons (W.) ... ... Cum. pref.	10	—	5	5	9 1/16	
Swan, Hunter & W. R. ... Ord.	1	35/6—26/-	12½	7	39/-	
Do. ... ... Cum. pref.	1	18/9—17/-	5	5⅞	17/6	
Do. ... ... Deb.	Stk.	82—80⅜	4¼	5⅜	78	
Thornycroft (John I.) ... Ord.	1	38/9—21/9	17⅜	9¼	35/10½	
Do. ... ... Cum. pref	1	18/6—16/3	6	6⅜	16/9	
Do. ... ... Deb.	100	95⅜—88	5	5½	86⅜	
Wallsend Slipway ... Ord.	1	2—1⅜	10	5	2	
Do. ... ... Cum. pref.	1	1—1	5	5	1	

* Including bonus.

† Also 20 % in shares.



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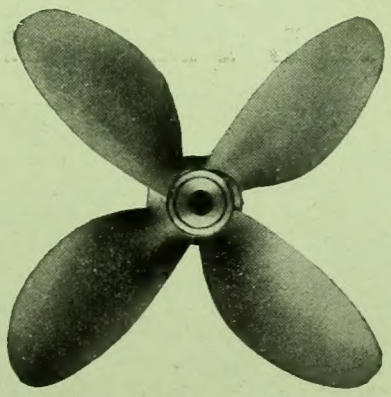

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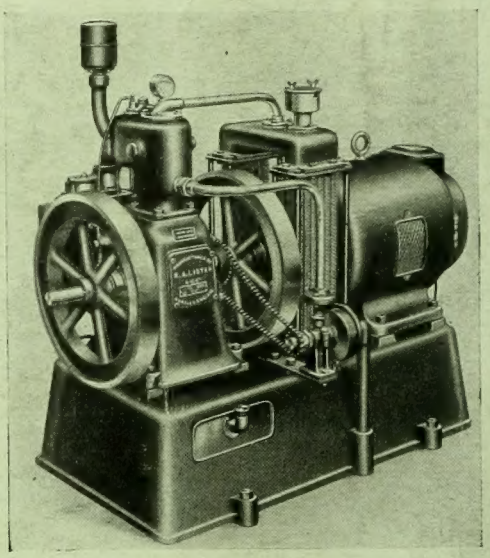

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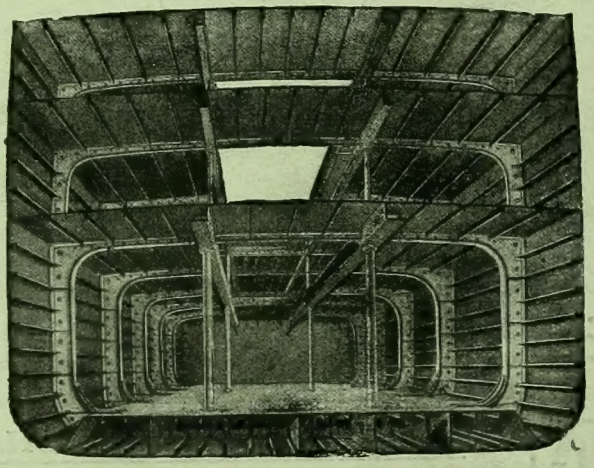

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